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Study of Physician Reimbursement Under Medicare and Medicaid: Volume I

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STUDY OF PHYSICIAN REIMBURSEMENT UNDER MEDICARE AND MEDICAID

Volume I

by

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ABSTRACT

In the CUNY study, two different techniques were used to measure the effects of carrier discretionary practices on Medicare reasonable charges. A national study using 50th percentile fees and adjusted prevailing fees for all Medicare localities analyzed the joint influence of socioeconomic factors, carrier pricing practices, and certain indicators of regulatory effort in investigation and reduction of submitted claims on fees. The dominant influence on fees, as revealed by factor analysis and multiple regression, was contributed by features of the local health economy reflecting the interaction of supply and demand. But carrier discretionary practices did add some influence. While it was chiefly those practices having to do with pricing when the usual information to form customary and prevailing fees was absent that were influential, investigation, reduction or rejection of claims also played a part. The micro study, conducted in Queens and Nassau counties, used simulation techniques to evaluate the effect on 50th percentile and prevailing fees caused by changing specific practices within the reasonable charge process. Most of these trials were conducted on Queens claims data, with the result that the socioeconomic environment had no opportunity to influence (bias) the result and the only element varied was the practice under scrutiny. While alteration of specialty designation, claims data merger, locality boundaries, and total computer program did not affect reasonable charges produced, changing the parameters used to exclude extreme charges significantly affected the number of doctors whose customaries could be used. The exclusion of some doctors from the reasonable charge process should be considered in conjunction with the national finding that "toughness" in pricing in absence of a customary did influence Medicare fees. In this important case, the two discretionary practices need to be regulated together.

The CUNY study also analyzed market behavior of both providers and beneficiaries in Queens and Nassau counties as revealed by claims data, and developed standard formats that can be applied in creating physician and patient profiles in other years and in other places. The study shows certain similarities in distributions between the two counties, but the Nassau market had providers with more patients, services and revenue and these patterns were mirrored in beneficiary distributions describing utilization. It is believed that this arises in part from the higher levels of income in Nassau; while health resources have been attracted, evidently demand sustains the market. However, another important factor is that Queens residents go outside their county of residence for care, particularly hospital-based and specialty services. Carrier behavior is implicated only - but this is a big "only" - insofar as locality designation does not recognize a common market based on utilization. Carrier jurisdiction is based on provider location. In this particular instance, a separate organization is actually handling New York county claims. While these circumstances are anomalous within Medicare, the conflict between provider location as the basis of reasonable charge computation and consideration of patient travel patterns is clearly possible in many metropolitan areas. Specifically, specialists might have an incentive to locate closer to patients if the prevailings took into account both the closer and more distant sources used by patients in the locality.

The analysis of Medicaid in comparison with Medicare accomplished indirectly what it proved to be very difficult to test directly. The original intent had been to study physician response to comparative fee structures representing, in effect, different levels of doctor input. We did indeed find evidence

of responsiveness to the Medicaid fee structure, but it tended to be gross-lack of supply of services to Medicaid patients. For the elderly, Medicaid tended to be used to supplement Medicare benefits, or rather to anticipate them by financing initial services received before the annual deductible was met. Thus Medicaid, for some, compensated for burdens unprovided for in the Medicare design with its copayment feature. For both elderly and younger Medicaid patients evidence of low utilization of office-based services suggests use of public clinics as an alternative. Medicaid's low fee structure provides little incentive to participate. One implication is that if Medicare turns toward a fee schedule for physician reimbursement, the problem of physician participation will surely be salient.

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PART A

OVERVIEW

CHAPTER 1

INTRODUCTION TO THE CUNY STUDY

Chapter 1 is an overview of the CUNY study of carrier discretionary practices and physician fees under Supplementary Medical Insurance. The report is organized in four sections: Part A presents background material on the economics of aging and the Medicare market, a review of literature and a summary of Medicare regulations; Part B reports on national findings about Medicare practices and fees; Part C describes a two-county micro study of carrier practices and experience of providers and beneficiaries under Medicare as well as a comparison with Medicaid in one of the counties; Part D discusses methodological problems, summarizes findings, and presents a consideration of policy implications and recommendations for research.

Medicare, enacted in 1965 as Title XVIII of the Social Security Act, was designed to alleviate the difficulties the elderly face in obtaining health care. The program was divided into two sections; Part A (hospital costs), and Part B, Supplementary Medical Insurance or SMI (physician and other health services). Administration of Medicare was delegated to non-governmental insurance carriers under the general supervision of DHEW. Blue Shield organizations, Group Health, Inc., and commercial corporations share in performing this function for Part B services.[1/]

The CUNY study concerns the effect of carrier discretionary practices on determination of physician fees under Medicare Part B. In conformity with the philosophy that Medicare payments were to be based on the traditional market, carriers were instructed to set fees using a process called reasonable charge determination. The CUNY study is primarily an effort to determine the impact of varying carrier practices in interpreting non-mandated aspects of reasonable charge determination on the fees that physicians charge elderly patients. Indirectly the study has implications regarding other aspects of health care for the elderly and disabled.

A survey of the economic conditions of the aged, which are pertinent to understanding what Medicare is intended to accomplish, is presented as background to the report. The change in income status associated with retirement is much greater for those with fewer advantages based on previous employment and is differentially felt by women, minorities, and other groups. The need for health security is intensified by the interrelations of health status and economic status. This section is followed by a general discussion of the economic aspects of Medicare. Relevant Medicare regulations are cited as part of a historical evolution to constrain the inflow of effective demand in an attempt to contain costs and maintain balance among policy

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1/ Department of Public Welfare, Oklahoma is also a carrier.

objectives. Medicare is often under difficulties in accomplishing its objectives because the market to which uniform rules are applied contains many varying circumstances of service and both equity and claims control may be affected. We also have reviewed a diverse body of health-economic literature concerning health care utilization, supply and reimbursement. Empirical studies have shown the importance of demographic, economic, and payment-system factors in determining the utilization of physician services. They have also shown interrelations of physician supply and fees. The variety of physician behavioral responses to expenditure control efforts under third-party payment has been only partially explored in research. In reviewing the literature, particular attention was given to both methodological and substantive aspects of the Institute of Medicine study, which uncovered the effect of general market forces on physician payment levels under Medicare and was an important precursor of the CUNY study. These background materials are presented as Part A of the report.

The report proceeds to presentation of the research findings concerning physician fees under Medicare. The study was carried out on two levels; examination of carrier practices and prevailing fee levels throughout continental United States, and a more detailed analysis of fees and other aspects of Medicare in two adjacent counties, Queens and Nassau in New York State. For comparative purposes, Medicaid in Queens county was also examined.

The results of the national study are described in Part B, which reports on fee levels, carrier practices, and assignment rates. The relationship of carrier practices, including dimensions of administrative performance, and socioeconomic variables to fee and assignment levels is explored via multivariate analysis techniques. An index was developed and used to compare fee levels in the various carrier jurisdictions. In general, interregional and inter-carrier differences in both fee level and fee dispersion were found. Another dimension of fee structure examined was the relation of fees charged by general practi-

tioners to those of specialists, of interest in connection with the goal of improving availability of primary care while recognizing professional quality as an element in reimbursement. Effects of application of the Economic Index (legislated in 1972 in an effort to control inflation in health care costs) on the fee level that results from the standard reasonable charge process were also assessed. It was found that the continued application of the Economic Index will change the Medicare reimbursement method to a fixed-fee system subject only to periodic updates. This implies that the expense involved in developing prevailing fees under the current system is largely wasted.

Assignment occurs when a patient transfers his/her right to reimbursement from Medicare to a provider who accepts the reasonable charge as full payment for a service. As indicated in Chapter 7 on assignment and program performance measures, the economic decisions of doctors inevitably involve assignment as well as fee choices, the former translating nominal fees into real ones. The CUNY analysis showed differences in assignment rates by region and by carrier type. Variation in program-related factors, which are such measures of carrier administrative performance as claims investigation, denial, and reduction rates, is also analyzed. Multiple regression techniques show that certain of these factors, which translate into doctors' expectations of delay, uncertainty, and revenue reduction, influence inter-carrier differences in assignment rates. Socioeconomic factors are also influential in this determination.

Following the report of the national study, the CUNY micro study of Medicare in Queens and Nassau counties is described in Part C. For administration of SMI, these areas are under the jurisdiction of Group Health, Incorporated (GHI) and Blue Cross/Blue Shield of Greater New York (BC/BS GNY), respectively. The study subjected the two carriers to various comparisons and examined fee levels and several aspects of provider and beneficiary characteristics in the two areas. To assess the fee effect of carrier options in the reasonable charge determination

process, a series of simulations was carried out based on claims for reimbursement for fourteen commonly performed Medicare procedures. Alternative parameters for customary and prevailing charge determination and various limits for defining extreme charges to be excluded from the process were tested. Fee effects of different carrier approaches to locality formation, specialty grouping and merging of non-Medicare data in reasonable charge determination were studied. Also tested was the overall effect of a carrier's reasonable charge program. By putting claims submitted to one carrier through the program of the other carrier and comparing resulting fee levels to actual fees, the program's net impact could be assessed. Finally, as part of the simulation study, the effect of the Economic Index on prevailing fees was analyzed.

The other set of comparisons performed in the micro study focused on provider and beneficiary behavior in the two counties. The provider profile was based on claims submitted to Medicare for reimbursement for services of all providers in the two counties. Nassau doctors were found to be more active and have higher Medicare revenue than Queens doctors.[1/] The beneficiary profiles were drawn under the important constraint that Part B jurisdictions are based on location of physician ofrices. Consequently service to Queens and Nassau beneficiaries by providers outside those two counties could not be identified. The fact that Nassau had higher user rates may be partially explained on the basis of greater out-of-county service to Queens residents, especially for highly specialized procedures.

For purposes of comparison, the Medicaid fee levels and Queens Medicaid provider and beneficiary profiles were also obtained. Because of the enormous size of the claims file, a sample of providers was drawn. All claims arising from Medicaid services by physicians included in the sample were studied.[2/] While this provides a good picture of physician activity under Medicaid, the information

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1/ No information on physician workload outside Medicare was available.

2/ No information on physician workload outside Medicaid was available.

about beneficiaries is limited to the services they received from the sampled providers and misses other sources of service. Another limitation is attributed to Medicare/Medicaid interfacing as explained in Chapter 14. It seems clear that physicians use Medicaid in relation to their elderly patients chiefly to be paid for early office visits before the Medicare deductible is satisfied.

Diverse data sources were used to carry out the CUNY study. The principal sources were:

- Materials supplied by HCFA on prevailing charges, carrier workload, claims processing time, and SMI expenditures and enrollment; carrier discretionary practices; and selected beneficiary information for Queens and Nassau.
- American Medical Association information on physician supply.
- Tapes from Blue Cross/Blue Shield-GNY, and GHI-New York containing claims data used in determining reasonable charges, GHI programs used in reasonable charge development and supporting schedules.
- New York City Medicaid claims tapes.
- The Area Resource File (ARF), a repository of socioeconomic data compiled and maintained by DHEW.

While many items in the Area Resource File are derived from standard statistical systems, most of the other materials were not generated for research purposes but are either administrative records or records created as a part of the reimbursement process. The data refer to selected years in the nineteen seventies, for the most part 1976 and 1977. Use of these sources yielded considerable information permitting a study of wide scope and analysis of many pertinent variables and their interrelationships.

The final chapters of the report, which make up Part D, consist of an overall analysis of methodological issues together with a summary of the most important findings and consideration of their reliability and significance. Recommenda-

tions for future research are also presented. The methods employed in each part of the work and the problems faced - some of them circumvented or overcome, others insurmountable - are stated in the relevant chapters. Because of dynamic market relationships, obvious limitations are imposed by the single-year data. Clearly the Medicare system itself is responsible for some of the difficulties with the data - that is, the "slippage" or variation in definitions from carrier to carrier, the difficulty of relating claims experience to individual diagnoses and other characteristics of claims file information. Many specific improvements or ways of supplementing claims data are possible and have been suggested.

Despite various qualifications relating to data, the findings show that carriers do vary in interpreting non-mandated aspects of reasonable charge determination and that several practices do have an effect on fee levels. It was also found that frequently carriers apply certain strict standards that tend to depress fees while at the same time following other policies that tend to raise fees.

The implication of carrier practices for health service charges is influenced by many factors in the medical market, such as the number of doctors in a locality who perform a particular procedure. Interactions of the payment system with market forces are strongly suggested by our findings. For example, under Medicare, fees were lower in Queens than Nassau, but Queens doctors were less likely to accept assignment, which may be interpreted as their effort to overcome lower nominal fees.

The study uncovered difficulties of monitoring a regulation-laden system in which it is easy to generate further sources of variation and possible inequities. A small detail in computer programming may have significant consequences, or a new regulation or carrier policy change aimed at overcoming one difficulty may give rise to another. For example, HCFA recently mandated the minimum number of instances for customary and prevailing charge determination. This regulation

promotes fairness to providers and beneficiaries in different carrier areas and weakens the impact of rare extreme charges but, as demonstrated by our simulation studies in Queens and Nassau, applying stricter parameters to reasonable charge determination may cause more services to be subject to discretionary pricing outside the standard reasonable charge procedure.

Finally, a most significant result of the research was the demonstration that application of the Economic Index tends to replace the reasonable charge process and to move Medicare towards a fixed-fee system. Duplication of administrative effort is certainly implied by retention of the RCP under these circumstances.

The CUNY report concludes with a discussion of policy implications of the research. The policy chapter is organized in relation to the Medicare administrative process, specific goals of the Medicare program and general health care goals. The recommendations for future research that make up the final chapter include examination of alternative methods of reimbursing physicians, studies that would prepare the way for payment based on specific diagnoses, and exploration of individual beneficiaries' experience. Since research on access to care is pertinent to the Medicare program goal of equity, a planned study of the physician's role in providing access to care for the elderly and a companion study of beneficiaries' success in achieving access are proposed.

CHAPTER 2

ECONOMICS OF AGING

The economic position of the aged population is basic background for understanding the aspirations and appraising the success of the Medicare program. Chapter 2 contains an overview of the roles occupied by the elderly, their income levels and the incidence of poverty, the factors involved in receipt of public and private retirement income, earning power, and policy issues regarding the income and earning rights and opportunities of the elderly. Health status and use of service influence economic status as well as being influenced by it.

It is striking that the elderly population contains much diversity as to rights to income, economic capacity, activity level, and autonomy. The range is from dwellers in institutions dependent on others for daily care to fully employed persons in good health, from those receiving public assistance to supplement small social security benefits to those with private investments as well as industrial pensions to draw on as retirees. The record also shows improvement in social planning for retirement income. Regional, race, sex and occupational differences pervade statistics on all these matters. The Medicare market is consequently a heterogeneous and changing one in terms of ability to pay, especially if the varied capacity of the elderly to arrange for personal care to support clinical management of illness is taken into account. Demographic diversity in terms of survivorship and nearness of children interacts with the economic factors mentioned to determine coping resources. Despite diversity, however, the bias is still toward reduced circumstances, and competition between medical and nutritional and shelter needs. The need to assure physician service at affordable costs is brought out by scrutiny of the economic landscape of the aged. The pricing process under Medicare, its interrelation with assignment decisions that limit patient outlay, and its power to evoke and sustain adequate supply are to be viewed as essential elements in governmental provision for aging. Growth of life expectancy is bound to keep up our national interest in an effective Medicare program.

Life expectancy provides a framework for consideration of the economic conditions of the elderly.[1/] Dramatic increases in life expectancy occurred in the United states between 1900 and 1960, and improvements continued after 1960. In 1975 the average expected life for a person just born was 72.5 years. Within this average, men had less life expectancy than women, and whites had more than all other races (Table 1). Persons already 65 could expect to live an average of 16.0 years more (12, p. 5-4). For individuals, survival and planning for old age are of course uncertain: 25.4% of those being born in 1975 would not reach 65 and 46.6% would not reach age 75 (12, p. 5-8). At the same time, those reaching 65 face a long period of life in which economic needs and resources must be balanced. Other probabilities besides survival *per se* are involved. A high proportion of women are divorced or widowed before retirement age. As of 1975, this proportion amounts to one-third of all women aged 46-60 years who were ever-married. Fewer than one-third of divorced women receive support from ex-husbands (13).

Social planning is able to deal with these uncertainties because actuarial principles can be applied. Both voluntary and compulsory funds may be used. Voluntary funds such as pension plans and individual annuities appeal to those seeking to avoid risks. However, those individuals who enjoy risk or are not responsive to it as a threat, and those who live with unwanted risk because their incomes are too low for current needs, can receive protection through compulsory funds such as social security.

1/ Chapter 2 is excerpted from C. Muller, The Economics of Aging, paper presented at CUNY conference on Gerontology and Aging Research: Status of the Art, September 30, 1978.

Table 2-1 Life Expectancy by Race and Sex, 1975

Per 100,000 born alive	White		All Other		Overall
	Male	Female	Male	Female	
Alive at age 20	97,015	98,033	95,611	96,772	97,270
Alive at age 65	69,386	83,204	54,349	71,484	74,593
Percent surviving to 65	71.52	84.87	56.84	73.87	76.69
Alive at 85	15,822	35,025	13,326	27,365	24,543
Percent surviving 65-85	22.80	42.10	24.35	38.28	32.90

(16, p. 5-11)

A close interrelationship exists between individuals' opportunities and experience in earlier years of life and their economic positions in old age. For example, both desire and ability to save for old age affect assets after retirement, and early choice of occupation affects freedom to continue work at will in old age. At the same time, responsibility for intergenerational transfers to the aged through the family and through the tax system influences the ability of younger persons to prepare for their own old age. Many, perhaps most, important policy issues regarding the elderly involve the extent of desired redistribution of national income among age groups and the most effective ways of bringing it about. The fact that employer contributions toward retirement are, through the workings of the market, eventually paid by workers themselves emphasizes that real sacrifices are involved in social provision for retirement.

Economic Roles

The economic roles of the elderly are important in a variety of ways. They determine possible income flows, they establish the individual in society, they involve meaningful use of time, and they preserve a range of personal options.

Elderly persons may participate in the economy as producers of both market and nonmarket services. Although nonmarket services entering into personal or family real income are difficult to measure, they may be an important component of the living standard. Two needs connected with nonmarket activities are 1) assistance when health is impaired, and 2) improving efficiency through social support services such as health education and consumer advice.

Elderly persons may also participate in the economy as property owners, but aside from residential property, this role is rarely a major one. In 1967 only 16-18% of aged "units" - couples or unrelated individuals - had more than 20% of their income from assets. Recipients of any asset income amounted to more than half of married couples and about 40% of the others (16).

Residential ownership is far more common than investments. In 1969 the proportion of nonfarm families with aged head[1/] who were homeowners was 71%. The figure increased from 59% a decade earlier, and the rate of increase was higher than for non-aged families. Owning a house, as has been pointed out, has both advantages and disadvantages. It makes a significant contribution to the net worth of the aged and toward real (as distinguished from money) income, but real income is not subject to discretionary reallocation by the individual. Many elderly persons are "overhoused" in relation to current family size, while the costs of house maintenance have risen with inflation.

1/ While the term "head(s)" is used in this paper in referring to various Federal statistics on the aged, future Census statistics will not use this concept, which has been rejected following criticism by social scientists and feminists for both its technical and its ideological biases.

One of the major economic roles of the elderly is that of consumer. The ability of aged persons to function as consumers to their own satisfaction depends on a number of factors. If they are out of the labor market, they have more time to acquire market information and compare prices and quality. However, they usually have less physical mobility, and some are unable to maintain car ownership.

Some of the consumption by aged persons is mediated by group or institutional buyers. For example, health care is financed through prepayment. Buying groups of aged have been formed to improve bargaining power. Aged persons who enter the institutionalized population become indirect consumers without autonomy in the market. (Table 2-2 shows aged persons in health facilities on a temporary and on a permanent basis.) Institutionalized persons and others often are converted into clients, part of a population that constitutes a form of asset for a variety of service agencies and proprietary organizations. Because of services they need, aged persons provide the raison d'être, or part of it, for organizations providing institutional health care, home health services, social services, group activities, pension administration services, etc.

One social policy issue that results is inadequate services for the elderly. Client status may also lead to orienting the range of options and the style of provision toward preserving or maximizing captive client populations rather than to helping them achieve greater autonomy and status.

Economic Status

Turning to a review of the economic status of the elderly, we first take a look at the distribution of poverty, and then examine major factors that contribute to determination of economic status in old age: social security, supplemental pensions, and employment. Health status is also

Table 2-2

Aged Persons in Health-Related Facilities [10/]

A. As residents			
Chronic disease hospitals		1970	35,192
Tuberculosis hospitals			5,608
Nursing homes		1973-74	
65-74	163,100		
75-84	384,900		
85+	413,600		
	Total		961,600
Psychiatric halfway houses		1971	400
Alcoholic " "		1971	100
B. As "episode" users			Discharges or episodes
State and county mental hospitals		1971	133,700
Private mental hospitals		1971	12,400
Veterans psychiatric hospitals		1973-74	6,900
Psychiatric units of short-stay hospitals		1971	36,100
Dept. of Defense hospitals		1973	18,812
Indian Health Service hospitals		1973-74	6,500
VA-general Medical and surgical hospitals		1973-74	152,800
Short-stay hospitals		1973	6,937,200
Community mental health centers (Federally-funded)		1971	9,200

significant, since both the need for intensive health services and the management of severely disabling chronic ailments are important threats to economic status. The uneven distribution of the rights to income from the three major sources noted, and the unfavorable economic position of those with impaired health status, stand out upon review of available statistics.

In discussion of income sources of the aged, earned income refers only to what is derived from current labor (or professional) services. Non-earned income received through social security and pension plans are based on previous earnings. Income from investments is another form of non-earned income even though common usage refers to "earnings" on financial assets. Transfer payments based on need (Supplemental Security Income) are non-earned income also. Thus non-earned income covers the range from the very rich to the very poor.

The poverty index was developed in 1964 and is based on the cost of an economy-level food budget considered to be equal to one-third of the total budget for a family of 3 or more, and 27% for a couple. For a couple with the man aged 65 or over, the poverty level of income was $2,985 in 1974 (17, p. 4), but this is an extreme definition of poverty resulting in an underestimate of the number of aged poor. The Bureau of Labor Statistics low level retired couple budget was $4,228 and the intermediate budget $6,041.

If the conservative concept of poverty is used, nationwide figures on poverty can be misleading for a given area. The cost of a retired couple's budget in a given area can be well above the national average, but benefits under law are not adjusted to the local cost of living.[1/] For example, Boston, New York, Hartford and other cities were well above average urban costs of an intermediate budget ($6,738 in autumn 1976), whereas Baton Rouge, Orlando, and Dallas were well below (9, p. 12).

1/ There may be some rough matching of benefits and area consumer prices because local earnings records are tied to the local economy. However, there are many intervening variables.

In addition, individual couples may have to spend a great deal for a particular budget item, so that their budgetary need is not reflected in a typical or standard budget. This is especially dramatic for medical care, but could also apply to transportation, special diet, or housing.

The number of aged with incomes below the poverty level fell from 5.6 million in 1959 to 3.3 million in 1974 (from 37.7% to 15.7%). This was the result of expansion and liberalization of public and private pensions. Furthermore, in-kind benefits not included in money income figures rose. However, relative to younger age groups the income of the elderly is not good.

In 1975, persons 65 and over in poverty numbered 2,634,000 whites and 652,000 blacks. There were 1.0 million males and 2.3 million females, or about 3.3 million persons in all. The poverty rate was 11.4% for men and 18.1% for women, and was higher for both sexes among unrelated individuals than for those living in families. The rates for unrelated individuals were 27.7% for all males and 31.9% for all females. Sex and race had an influence; the rates were 23.8% for white males, 29.1% for white females, 51.8% for black males and 65.8% for black females. The 400,000 male and 1.7 million female unrelated individuals represented by these rates made up 70% of the aged poor.

If income is expressed as a percent of the poverty level, then of the 21,662,000 persons aged 65+ in 1975, 442,000 were under 50% of the poverty level, 801,000 between 50% and 74% of it, and 2,073,000 were between 75% and 99% of poverty level income. However, an additional 4.3 million were in brackets just above the poverty level of income.

Farm dwellers were only slightly more likely to be in poverty than nonfarm dwellers, but there were strong regional differences, the poverty rate for the aged being especially high for the South and even more so for Southern blacks (46.3%). The rate was higher in nonmetropolitan compared to metropolitan areas, and in central cities compared to other locations within metropolitan areas.

Within "poverty areas" the rate was 29.1% compared to 11.0% in other areas.

Marital status correlates with poverty rates. Among unrelated individuals, widowed women have a rate of 62.1%, almost double the rate for singles. Men who are separated are more likely to be poor than those who are widowed or divorced (11).

Income Sources

Of 8,163,000 families with an aged head of household, there are 4.0 million with earned income, of whom 3.4 million derive it from wages and salaries rather than self-employment. In all, 7.4 million get social security, about 900,000 get public assistance or Supplemental Security Income (SSI) and 1 million get other transfer payments. Property income is received by 5.3 million, and pensions other than social security, alimony, and annuities are received by 3.1 million. An average of 2.7 types of income are received.

Of 6,851,000 unrelated individuals, 1.2 million have earned income, 6.2 million have social security, 950,000 get SSI, about 600,000 get other transfers, 3.7 million have property income, and 1.7 million have pensions, alimony, etc.

Social Security

Not many people are able to allocate income over a lifetime because information about the worth of different options is imperfect, certainty about the future is lacking, and the length of retirement has been increasing. Collective retirement plans enable society to carry out its commitment to replace the extended family, and enable the individual to avoid the stream of uncertainties facing choice of a savings rate, and attainment of it.

The Federal social security program initiated in 1935, and noted above as an income source for most of the aged, is described as a compulsory intergenerational transfer system to deal with income maintenance in old age. To examine its adequacy, we draw on the Continuous Work History Sample of the Social Security Administration (SSA), a 1% longitudinal sample of persons with covered employment, taken from reporting forms and records used in program administration. What follows is based on retired and disabled workers on the benefit rolls at the end of 1972 (4). The covered earnings determine eventual benefits through a computation in which the worst earning years are discarded. (All earning years, however, are considered in establishing that the required quarters of coverage have been satisfied.)

Sex comparisons show that women had lower benefits than men. The primary insurance amount (PIA) is affected by 1) starting work at the beginning of adult life rather than later; 2) stopping work at a later rather than an earlier age; 3) continuity of employment; and 4) earnings levels. These may be interrelated. Discontinuous work histories and low earnings may be associated, producing a low earning history, and early retirement is found with poorer earnings records (6).

In 1972 15.5 million retired persons were on the social security rolls - 8.9 million men and 6.6 million women - but only 14.6 million received benefits because the rest had enough earnings to offset benefits due. Men had longer coverage - 65% began before 1941, and 17% between 1941 and 1950; comparable figures for women were 41% and 34%. For those with the most extended coverage in years, 40% of men but only 13% of women had covered earnings of $80,000+. The result was smaller primary insurance amounts: for those with at least 30 years, 84% of men but only 51% of women had a PIA of $200+ per month.

Race comparisons are also available, and they show that overall, white

workers have higher PIA's and higher lifetime covered earnings than other races. For workers with credits before 1941 and 80-119 quarters of coverage, 70% of white men had PIA's of $200 or more but only 43% of black men did so. The primary insured amount is under $200 for 50% of men 62-64, 41% of those who are 65-71, 50% between 72 and 79, and 71% for age 80 and over. Similar figures for women are: 84%, 75%, 83% and 93%.

Pensions

Pensions available through private and public employers are part of the collective retirement plans referred to earlier. Pensions can be considered societal because they are a) regulated by the government, and b) subsidized through preferential tax treatment. The private industrial pension system is an important source of retirement income, but it is uneven in its effects on the economic status of individuals. Private pension coverage expanded from 9.8 million workers in 1950 to 26.1 million in 1970. Following dramatic growth in the 1950's, the 1960's saw liberalizing of benefit formulas, vesting requirements, and mandatory retirement age. However, many workers are uncovered, or never collect benefits under plans to which they belong. This is due to restrictive vesting and service requirements, withdrawal of contributions on leaving the job, and bankruptcy of firms and their pension plans.

The passage of the Employee Retirement Income Security Act (ERISA) in 1974 guaranteed vesting rights for employer contributions even if all employee contributions are withdrawn when changing jobs. Under vesting, a worker does not lose rights to a retirement income upon leaving a job in a firm with a pension plan; benefits are deferred until retirement age is reached. Vesting was spreading voluntarily before ERISA, but was reported by only 1/3 of workers with coverage in 1972. Since likelihood

of vesting depends on job tenure, wage level, and, particularly, industry/occupation categories, vesting is related to other features of pension adequacy that vary across categories of workers.

Pension portability through multiemployer networks allows reciprocity of pension rights. This is a fast-growing form of pension organization. The number of workers who were covered in this way in 1973 was 7.5 million, equal to one-third of all covered workers in 1970. Portability is found with multiemployer collective bargaining, and overcomes limitations due to small firms, seasonal or irregular employment, and frequent job change. A drawback of these plans is that they do limit the freedom to work anywhere in the industry.

Figures on pension adequacy come from the Retirement History Survey, which studies pension coverage and receipt of pensions in relation to the longest job held (7). Most pensions use earnings history and not terminal income as a base, and therefore length of work life is critical in evaluating benefit level. Of those persons who were in the private sector on their longest job, 49% of men and 21% of women had pension coverage. For men, rates were higher for manufacturing and professional service industrial groups; professional and clerical occupations; those with 21+ years on the longest job; and those earning $7,500 and over. If they were still employed on the longest job in 1969, the coverage rate was higher. The trends were similar for women, except that the best industries were transportation, communication, and public utilities. However, women were more likely than men to have had job characteristics associated with low coverage, and in addition, their coverage was less than men's within each category. For instance, in manufacturing, 63% of men but only 31% of women were covered. For men and women with similar industry, occupation, salary, length of service, and continued tenure in 1969, the rates for the most advantaged group were 61-62% coverage.

In 1972, 72% of men who were covered by a private pension but had no earnings in that year received benefits, and 55% of the women did so. These low rates were not explained by absence of early retirement options under pension plans, since the rates were not higher for those aged 65-66 compared to those under 65.

The sources of pensions for government workers vary. Federal employees have their own retirement system, and no dual coverage with social security is allowed. For state and local employees, dual coverage is not precluded, and about 58% of personnel have it. However, 8% of state and local employees do not have coverage through a retirement plan other than social security.

Twenty-six percent of the men and 42% of the women who had pension coverage in private industry received only social security benefits; similar figures for government workers were 11% for Federal civilian employees and 19% for state and local employees. Reasons for this include termination of service before vesting, withdrawal of contributions by workers on leaving a job, and temporary work status.

Of all non-earners aged 61-66 in 1972 - summing public and private employees - only 48% of the men and 21% of the women received dual retirement benefits.

The median income from pensions was, for men, $4,290 for government workers and $2,230 for private workers, and for women $3,650 and $1,200. The reason for the sex difference in pensions in private employment is differences in earnings, because length of service among recipients was the same.

The theory that Federal social security will be supplemented by pension income - and at adequate levels - is not a reality for many retired persons. ERISA will improve the situation for many currently employed.

In the United States in past years, compulsory retirement in industry and social security worked together to dislodge many employed persons from their jobs at age 65. A substantial number of these elderly reenter the labor market but they do not compete for the same types of job they previously held. Instead they augment the available pool of candidates for less desirable and less remunerative jobs. Some of the postretirement jobs yield so little that persons on social security may continue on benefit status; or, from another viewpoint, social security made possible a labor market for part-time work. In other cases, a private pension ekes out earnings, but the person does not file for Federal benefits.

A flexible early option for retirement with a reduced social security benefit before age 65 was first offered to women, many of whom had a poor earnings outlook in their sixties. The rationale offered was that the typical age difference between husband and wife made joint retirement more possible if this option were used. (Today the age difference between spouses is narrowing, and more women have continuous work records.) However, the option was soon extended to men and tended to be used by those who had disabilities or trouble finding work. The 1978 law (effective January 1, 1979) shifts the minimum age for forced retirement to 70, at which time the retirement test (i.e., a cap on permitted earnings) ceases to apply (5).

As it is easier to keep a job than to look for a new one, this law will probably raise the labor force participation rate after 65. At the present time those who do work after 65 can add to their earnings records on which benefits are figured. This is advantageous to those with less adequate employment histories. As Medicare starts at age 65 regardless of employment status, it is not an incentive either to stop or to continue work. (However, copayments and uncovered services could stimulate the desire for earned income.) Tax privileges and other subsidies start at age 65 or earlier regardless of employment status.

In 1974, 10.4 million workers - about 45% of workers in defined benefit plans - had mandatory retirement at 65 or later and many were in plans with forced early retirement. Under some plans a worker cannot be kept on, and under others an employer can extend further employment on a year-to-year basis. Automatic retirement (with no extension option) usually applied at age 68. In some of the plans with forced early retirement a worker with 25 (or 30) years of service receives extra benefits if dismissed, but in others the benefit is no greater than the regular early retirement benefit (3).

Among aged males in families, over half have no earned income; among female heads of household, about 2/5 are in this position. The percent of family units in poverty is 15.2% for those with earned income only, and 12.6% for those with non-earned income only, but drops to 4.7% for those with both sources of income.

Older workers tend to be less mobile both geographically and occupationally. For example, only 5.5% of all persons moving to a different standard metropolitan statistical area (March 1975-March 1977) were 65 or over, although the aged were about 11% of the whole population at that time. The proportion of workers 65 or over changing occupations was 1.7% for men and 2.5% for women, and in the ages 55-64, the proportions were 2.6% and 2.4% - representing a drop from younger ages (9, pp. 1,3).

The 1975-1977 employment rates for those past 65 showed much more intrayear variability than for all persons. Also, the current duration of unemployment is much longer - 29.1 weeks average in March 1978 compared with 16.9 weeks at age 45-54, for example (9, p. 5). Many older persons leave the labor force (or stay out, once having left) because they think they can't get work. This was the leading reason offered for not looking for work in 1977 (36.6% of the aged offered this reason, double the percent for

all ages). The labor force participation rate drops with advancing age. Figures over a period of years for both men and women show a rise in the proportion taking early retirement at reduced benefits: by 1974, 46.4% of men and 64.6% of women retired in this fashion (9, p. 8).

Health Status

The interrelationship of health status and economic status is especially noteworthy in old age. Low-income recipients are less able to afford good nutrition, safe housing with proper control of temperature and humidity, and needed health services. Persons in poor health utilize more health services in and out of hospital. They can be obliged to draw on savings to meet costs, even under Medicare, of copayment, deductible, uncovered services, and charges by physicians in excess of Medicare allowed charges. For those under 65, Medicare is available if a disabled worker benefit has been authorized (446,000 men and 194,000 women aged 60-64 were in this category in 1972)(4). For others aged 60-64, Medicaid, which is public assistance medical care, supplements private resources and insurance.

Income level is negatively associated with health level as indicated by chronic limitations and disability days (Table 2-3). However, in these data the percents of aged persons using physician and hospital services show little relationship to income. Other sources indicate that persons with the highest incomes do use more services per person than most other groups. Hence utilization does not match need. Nevertheless, chronic illness is a powerful factor in utilization and accompanying expenses. Persons with some activity

limitations number 39.3% of the aged. They constitute 3.9% of the whole population but account for 8.0% of all office visits, 7.0% of all hospital discharges, and 11.9% of all hospital days. In addition, they make up most of the nursing home population, a group for which 3.4 chronic conditions per resident have been reported (14),(15). Other figures show high rates of multiple conditions among the aged, entailing longer stays in the hospital and more expense.

Aged persons in the upper half of the income distribution tend to have supplementary private hospital coverage to pick up costs not covered by Medicare. Hence protection against economic risks of illness is correlated with other measures of economic status.

TABLE 2-3

Health and Health Care Indicators for Persons Aged 65+ by Income (8)

Income ($000)	Percent with doctor visits in past year	Percent with short stay hospital episode in past year	Percent with limitations	Restricted activity days per person
Under 5.0	79.7	18.9	53.4	50.3
5.0-9.9	80.6	18.4	43.1	36.4
10.0-14.9	81.2	18.6	39.6	31.5
15+	81.2	19.2	38.7	28.0

Policy Issues

Major policy issues concerning the economics of aging involve the social security system, the private pension system, the participation of the elderly in the labor market, the tax system, and the use of general revenues to improve the position of elderly persons.

One major social security issue is how much of the income of the aged should be derived from a universal public program. Private pensions vary from one place of employment to another and by occupational level, and have other limitations. Hence the public program is more likely to provide uniformity of protection unless private pensions are placed under more regulation. But the tax rate required to increase the share of public benefits in total retirement income impairs the disposable income of economically active age groups, and this is an obvious deterrent to passage of the legislation that would be needed. Younger persons may support such laws if they perceive a benefit to themselves in later years, or if they foresee relief from obligations for aged parents (depending on whether legislative changes apply to current retirees.)

Another social security issue is the extent to which benefits should be wage-related (2). Protection to the poor is attained by weakening of an element in the reqard structure for labor. Some of the poor have had long earnings records at low wages; others have a more marginal attachment to the labor market.

Another major concern relates to women whose length of service in the household has hitherto had no standing with regard to social security except as filtered through the status of a spouse.

Other social security issues concern the level of wage replacement achieved

by benefits (of critical interest in each person's retirement decision, as well as for prevention of poverty), and the commitment of the system to adjusting benefits of current beneficiaries to cost of living changes and to rising expectations based on productivity.

Although at present the spouse benefit allows 99.4% replacement for a low-income worker retiring at 65, replacement is only 53% in absence of this benefit (for a worker retiring at age 62). The social security replacement rate falls rapidly as earnings record rises. A worker with median taxable earnings in each year could never reach a 71% income replacement rate (considered to equal parity); 46.2% is the average, and for a worker with maximum earnings only 33% is replaced (17).

In bargaining for private pensions there is a competition for priority between wages (and wage supplements) immediately accessible to younger workers (e.g., fertility-related health care) and more adequate pension plans. This involves an internal choice (wages now vs. future income) for each person, and a group choice (younger workers vs. those approaching retirement). At the social level, several improvements need to be analyzed as to the cost of each, and who pays for it: 1) pension adequacy and equity through higher benefit level; 2) early vesting (a permanent right to accumulations financed by the employer regardless of later changes in employment); and 3) more general portability (the right to add to the retirement accumulation in each subsequent job).

Policy concerning the participation of the elderly in the labor market involves relationships to social security, supplementary pensions, manpower policy and the tax structure. The success of the benefit structure in supporting individual choices, such as adapting retirement to health or psychological preferences, reversibility of the retirement decision, graded

retirement, and shift to a different industry or occupation, should be monitored and translated into policy recommendations. Possible methods of subsidizing work force participation by the elderly need to be explored, such as exempting "aged" payroll from various taxes, exempting it from fringe benefit obligations under collective bargaining, part-payment of wages, assistance to employers for project and job development, and individual retraining.

References - Economics of Aging

1. Yung-Ping Chen, Income: Background Issues, The Technical Committee on Income (with the collaboration of Dr. Chen), 1971 White House Conference on Aging, March 1971.

2. Peter Henle, Recent Trends in Retirement Benefits Related to Earnings, Monthly Labor Review, June 1972, pp. 12-20.

3. Dorothy R. Kittner, Forced Retirement: How Common Is It? Monthly Labor Review December 1977, pp. 60-62.

4. Barbara A. Lingg, Lifetime Covered Earnings and Quarters of Coverage of Retired and Disabled Workers, Social Security Bulletin October 1977, pp. 3-16.

5. John Snee and Mary Ross, Social Security Amendments of 1977: Legislative History and Summary of Provisions, Social Security Bulletin, March 1978, pp. 3-20.

6. Gayle B. Thompson, Aged Women OASDI Beneficiaries: Income and Characteristics, 1971, Social Security Bulletin, April 1977, pp. 23-48.

7. Gayle B. Thompson, Pension Coverage and Benefits, 1972: Findings from the Retirement History Study, Social Security Bulletin, February 1978, pp. 3-17.

8. Martin B. Tracy, Flexible Retirement Features Abroad, SSB May 1978, pp. 18-36.

9. US BLS - New York Regional Office, Some Facts Relating to the Graying of America, for presentation by Herbert Bienstock at Yeshiva University Conference on Aging, June 1, 1978.

10. US DHEW, The Nation's Use of Health Resources, 1976 Edition, DHEW Pub. No. (HRA) 77-1240.

11. US Bureau of the Census, Characteristics of the Population Below the Poverty Level: 1975, CPR, Consumer Income, Series P-60, No. 106 (June 1977).

12. US NCHS Vital Statistics of the United States, 1975, Vol. II - Section 5, Life Tables (Hyattsville, MD 1977).

13. Task Force Report on Treatment of Women under Social Security, SSB May 1978, p. 38.

14. Health Characteristics of Persons with Chronic Activity Limitation, United States-1974, Vital and Health Statistics: Series 10, No. 112, Data from the National Health Survey (DHEW Publication No. (HRA) 77-1539), Health Resources Administration, National Center for Health Statistics, Rockville, Md., October 1976.

15. Measures of Chronic Illness Among Residents of Nursing and Professional Care Homes, United States, Vital and Health Statistics: Series 12, No. 24, Data from the National Health Survey (DHEW Publication No. (HRA) 74-1709), Health Resources Administration, National Center for Health Statistics, Rockville, Md., 1974.

16. Relative Importance of Income Sources of the Aged, ORS/SSA Research and Statistics Note, May 29, 1973, DHEW Pub. No. (SSA) 73-11701.

17. National Planning Association, The Role of Private Pensions in Maintaining Living Standards in Retirement, by Robert Clark, NPA Report No. 154, October 1977.

CHAPTER 3

MEDICARE

Chapter 3 describes the Medicare Part B program and the economic setting in which it is applied. Monitoring and analysis of Medicare performance must take account of the difficulties and fundamental goals in the context of the health care market. While Medicare's potential responsibilities have been increasing, it is limited in its effectiveness because a structure of rules is applied to a market in which there are many variations in circumstances and in which providers can alter their behavior and influence the impact of regulations.

Economic Aspects of Medicare

Under the Medicare payment method, a broad definition of a market within which "payment levels" will be set is laid down, rules for the computation of payment levels are framed, and circumstances in which they apply and rules for handling of exceptions are stated. It is assumed that physicians regardless of the organizational mode they choose will be reimbursed on a service basis; however, episodes of surgery are often considered as a single service (within parameters for pre-surgical and after care).

Medicare's difficulties arise from the opportunities that providers retain for creative response to regulation. They may redefine services they provide, shift to different services within the office, or to the hospital, or add to the volume per patient by ordering revisits and tests. They may decide not to accept assignment if official payment levels are not satisfsctory, and this may imply rejecting patients who do not or cannot undertake to pay the full charge. They may or may not collect deductibles and the 20% of the allowed charge for which the patient is liable. Conceivably, they may take Medicare payment practices and levels into account in choosing their location of practice.

The exposed position of Medicare in relation to physician behavior has resulted in a fee inflation in which physician charges and income drew national attention as a threat to planning and stabilizing the health care budget.

One of the economic aspects of Medicare is that a uniform benefit right is provided in theory but not in practice. While adjustment of service quantities (and thus of program expenditures) to individual differences in illness and need <u>is</u> in accord with the theory, differentiation goes beyond this: 1) interpretation of need depends on patient factors, including access to doctors 2) overperformance not related to need and/or resulting in health improvement is a

feature of health care in the U.S. 3)carrier differences in Medicare administration can affect inter-areal distribution of Federal expenditure - between populations that are similar as to need.

Another feature of the Medicare economy is that pricing rules which are given some uniformity by regulation are applied to a variety of practitioner workload situations and may not lead to uniform consequences. The same can be said of the impact of an administrative practice within the territory of a carrier. The doctor doing "bread-and-butter" office care may or may not augment revenue per patient by prescribing and performing diagnostic tests. The conduct of out-of-specialty procedures may be justified by familiarity and convenience to the patient, but such performance in other instances is not in conformity with standards of local practice. The repetition of procedures may occur on an idiosyncratic basis, and the preference for use of the hospital may be unrelated to medical considerations. The family doctor in group practice may have less disincentive than one in solo practice to refer a patient to a specialist. Satisfying parameters of minimum numbers may be very simple for high-volume procedures and for certain doctors, difficult for others. The physician-procedure-patient unit is, contrary to fact, assumed to be homogeneous in important respects.

Parameters for customaries are a prime example of the difficulty of fitting rules to the market, particularly where the probability of accumulating a given minimum is low because of low occurrence of certain conditions in the Medicare population. Pricing rules can sustain or curtail incentives for infrequent performers (e.g., physicians doing "out-of-specialty" work) to participate in the market rather than refer the work to others. A decline in surgery rates following second opinion programs could enhance the likelihood of infrequent performance of certain procedures by individual doctors. The level of use of rel-

ative value scales and conversion factors is affected by the relation of number of parameters to actual distribution of infrequent performers. This may contribute to fee inflation or at least not hold it back since it appears that the most frequent procedures among the aged increased in relative value units between 1969 and 1974.[1/]

Another aspect of Medicare is the relative efficiency of different types of carrier organization.[2/] Vogel and Blair have used the ratio of administrative costs to administrative plus claims cost in estimating an average cost function for health insurance claims administration. Their findings indicate superior efficiency for commercial compared to Blue carriers, shown by the absence of economies of scale found in their analysis of Blue Cross. They conclude that managerial slack is created by competitive advantages of nonprofit plans under law. However, no relation was found between Blue plans' efficiency levels in their own business and their efficiency as agents of government under Medicare (both Part A and Part B). Vogel and Blair do admit that the level of administrative costs is higher for commercial firms. The question of whether the services provided - such as consumer choices - justify paying these costs is not settled. The same question can be raised for community services provided by Blue plans and used to justify their competitive advantages. There are many methodological issues, in particular, output homogeneity and the unit of measurement of scale, that plague this analysis.

Alternative options available to government in contracting out Medicare administration include type of organization and basis of payment (per claim or per enrollee).

1/ Analysis conducted by CUNY on NCHS data with CRVS units.

2/ Ronald J. Vogel and Roger D. Blair, Health Insurance Administrative Costs, SSA ORS, DHEW Pub. No. (SSA) 76-11856 Staff Paper No. 21.

Evaluation of the Medicare reasonable charge process involves consideration of effectiveness in keeping within acceptable or desired bounds such basic aspects as administrative and claims cost, managing utilization in relation to appropriate norms for the age group, and achieving maximum levels of satisfaction for beneficiaries and providers dealing with the system. These various goals have to be compromised: for instance, very stringent administrative rules and intensive enforcement could keep claims costs down but would entail great administrative expense and might reduce both beneficiary and provider satisfaction. Furthermore, the running of Medicare takes place in a market which has very largely been generated by Medicare itself and the administrative/regulatory process is constantly encountering situations in which a disincentive is constructed after much effort in order to check the effect of an incentive supplied by the initial injection of demand and the specification of the reasonable charge process.

The administrative cost of the process of determining reasonable charges has several facets. It includes the carrier tasks of determining the principles of organizing claims data (locality determination, specialty grouping, and others), then selecting and grouping the valid claims to be included in computations, executing the tasks in the sequence needed to arrive at prevailings, considering comparable data (a discretionary step), and application and review of parameters. Since many physician-procedure [1/] units fall outside parameters, individual calculation using conversion factors and other approaches is a repeated occurrence - a secondary channel for reasonable charge determination alongside the mainstream. Claims payment, investigation and denial or reduction, and handling of appeals have a structure of costs that is basically set by the RCP approach. The extent to which these costs are influenced by carrier

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1/ The unit of performance and selling created when one physician performs one procedure x times in a calendar year. (See also p. 3-3)

organization and philosophy, and the extent to which case mix and priority given to consumer status and community service affect costs have been given very serious attention in order to define alternatives available to HCFA within the RCP approach. A significant, indeed central, issue in evaluating current expense for performing price determination functions is the impact of the Medicare economic index.[1/] The levels of adjusted prevailings are so far removed from the levels arrived at through the RCP as to suggest strongly that the latter is dispensable at least in part. That is, physicians with an adequate base year record could have an index-based update. Adjustments might be made for doctors starting or moving a practice, adding a procedure to their practice, etc. In general, then, one of the issues in evaluating minor and major changes in the RCP is administrative cost before and after the change is made. A related and major policy issue is whether HCFA can control administrative cost as a purchaser of administrative services and still receive a service product conforming to defined characteristics.

Ability to control claims cost under the RCP payment method is determined by the interaction of several features of Medicare. The prevailing fee itself is one such feature, even though for patients using physicians whose charges exceed the prevailing and who do not accept assignment out-of-pocket costs are not controlled. The instruction to carriers to merge or compare other claims data is severely restricted in effectiveness by the variability in overlap between aged and non-aged markets for specific procedures. The extent of effort to consider other data is discretionary and also depends on the market share of all private business in a given state or area that the carrier enjoys. The

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1/ See page 3-34.

interpretation of the covered service list as a restriction on claims validity depends on the carrier but also on the description of treatment activities by physicians. There is in addition a substitution effect to reckon with insofar as a denial of one service may result in heightened use of another service that is on the covered list.

Setting of parameters for excessive service is an administrative check that is comparable with the RCP. Some procedures are theoretically non-repeatable (e.g., hysterectomy), others can be repeated only with trouble and risk. The leverage of this control depends on the portion of the medical market captured, the parameters chosen, and the significance of loss of flexibility of practitioners' judgment for patient care.

The fact that Medicare has no upper limit on services per patient is a major negative feature from a cost control standpoint. Reimbursement for second opinions is another option for control of excessive services and costs. It is given salience if reimbursement is more complete than for other Part B services, if a second opinion is mandatory, and/or if referral centers and services are part of the Medicare program. Second opinions could, however, involve invasive or uncomfortable double examinations and tests, an element of delay, and a rupture in relationships, and such problems need to be explored and defined. Even though several years ago the Federal Courts enjoined DHEW from requiring hospitals to pre-certify the medical necessity of non-emergency admissions, application of the principle of a confirmatory judgment to hospitalization decisions or to major therapeutic plans may be a next logical extension. The tension between incentive and disincentive is most seriously felt in claims cost control.

Quality control is always a consideration in evaluation of Medicare, even if not explicitly stated, because control of costs by reduction of quality

may violate equity and open a path to later even higher charges to the system if health deteriorates. Today in the vast majority of areas (parts of Florida, Kansas and New York and North and South Dakota are exceptions) Medicare uses a specialty screen concept incorporating a quality differential into the fee structure. It is, however, a loose approach. Many self-declared specialists are included in specialty prevailings. Some out-of-specialty services are rendered by board specialists without any merit justification for a fee distinction. Board status if used as a criterion is not necessarily a tight measure of personal ability (because of obsclescence of knowledge and individual variation in judgment and skill) and certainly not an adequate measure of process quality, which also depends on appropriate and effective aides, equipment, time and systemization. Moreover, the RCP reimbursement approach provides no incentive for physicians to select their clinical acts so as to keep patients out of hospitals and does provide an incentive to put them into hospitals. To take a simple example, a daily, reimbursable visit is a commonplace under non-surgical admissions and requires no arranging or sacrifice on the part of the patient, whose cooperation is therefore assured. Medicare provides no disallowances for clinical acts and decisions that turned out badly nor would such really help the patient. There is no structured surveillance of failure to arrange for revisits and tests; while it may be hard to concentrate on this because overutilization is a concern, precisely for this reason the neglected patient may be neglected in evaluation as well as in care.

Medicare is a public program that affects the aged directly and millions of family members indirectly. It also affects almost the entire medical profession. Evaluation of Medicare as a program has to include satisfaction to beneficiary and provider.

Beneficiary satisfaction includes questions of economic security, equity, access to care of optimal quality, and process satisfaction. A feature that is

conducive to full economic security against costs of needed care is the absence of a dollar limit or other limit on aggregate care. However, even setting aside copayment obligations if service is provided at allowed charges, security to the individual conflicts with choice of provider: if the desired physician does not accept assignment the patient is not protected if the practitioner's charge is above the prevailing. Physicians also vary as to collection of coinsurance and deductibles. Security and equity problems blend. That is, the position of the patient depends on individual negotiation rather than being a matter of a truly universal benefit. As a result there are some who are very well covered, others partly covered, and others with minimal coverage of their health care needs and personal resources. Access is left ambiguous since the RCP does not differentiate between those for whom travel to certain desired doctors is easy and other patients. For some this can be tolerable because of relatively cheap transportation (e.g., Queens is within New York City transit lines) or absence of mobility limitations, but for others, such travel can be a prohibitive cost. These two distinctions illustrate differences that may be important between areas and within areas not recognized in the Medicare pricing system.

Beneficiaries' ease of filing claims and handling appeals enters into a satisfaction measurement. Not a great deal is known about this, although carriers' performance rates on appeals are measured. Ignorance of the Medicare reasonable charge, the workload profile of the physicians used, and the probability of being referred to certain specialists in a referral chain, reduces beneficiaries' power in the system. If they knew that a certain doctor almost never performed a certain procedure, would they still consult that doctor and become an "extra-parameter" claim? Information parity as to doctor statistics under

Medicare could change power distribution and behavior on both sides. Carriers have thus far avoided such interventions possibly because of the added administrative costs which might result and indeed have not been urged to undertake them by HCFA.

Another area of absent action relates to physicians' discretion as to not accepting Medicaid patients who are over 65: no condition of acceptance has been tied to the status of qualified provider under Medicare, thus possibly confining the Medicaid aged's access to a limited number of sources of care. This could result in a distortion of treatment patterns since a special motivation is created for some practices to take on Medicaid business which other practices choose not to service.

Provider satisfaction involves both vertical and horizontal equity in material matters and an acceptable administrative process.

Vertical equity is apt to be centered around recognition of distinction of specialty training: however, carrier practice varies in this regard. Restriction of payment to qualified specialists for certain difficult procedures may be desirable; but not even an information source on this has been created. Such restriction is by and large absent in the 50 top procedures since GP fee screens are widely distributed in Medicare localities. Horizontal equity within localities can be met by the RCP process; but whether it is satisfied across localities depends on the extent to which fee differences are explained by the socioeconomic environment.

The timing of payment is, <u>a priori</u>, an important matter in provider satisfaction. The provider population is adversely affected if the intensity of investigation efforts varies arbitrarily. The speed and outcome of the hearing process are elements of satisfaction. In general, doctors in practice are discommoded financially and subjectively if there is conflict

between the list of covered services and the parameters for excesses on the one side and the norms of medical practice in the area on the other side. Then the potential for investigation and denial is enlarged. Certain specialties may have more of such stress than others, but this has been little analyzed.

Finally, Medicare should be looked at from the point of view of positive health prevention and education. As it now exists under law, the system does not allow for affecting health in old age by pre-retirement services, modifying the environment, or promoting a health maintenance model within old age. It is confined to care of acute illness. To point the way toward desirable modifications, cost should be evaluated on a person-year basis with account taken of different risk classes. Then the effect of given modifications such as reimbursing for health education or preventative services could be studied.

The Medicare Market As Illuminated by National Data

The interrelations of the Medicare market with the market for health care in all age groups are indicated by data from several national sources. Such relationships should be understood in interpreting the probable impact of regulations and carrier practices on patients and doctors. The data refer to various years and differ in methods of collection (household interviews, physician log, etc.) but are adequate for gross delineation of the Medicare markets.

Consumer Expenditure Survey

The interview portion of the Consumer Expenditure Survey (CES) supplies information on 14,117,000 families with head aged 65 or over in 1973. They had a mean out-of-pocket expense (the family expense divided by 1.7 persons, average family size in that age group) of $153.44, compared with $99.74 for all age groups. The percentage of family income represented by out-of-pocket

health care expense was 4.4% for the aged, compared to 2.7% for all age groups. 1/ For Medicare enrollees, out-of-pocket expense arises from deductibles, coinsurance, doctors not accepting assignment, and uncovered services.

Current Medicare Survey

Coulter's tables 2/ from the 1973 Current Medicare Survey (CMS) show an average charge under SMI of $13.60 for physician services in the hospital and a range from $8.60 in the nursing home to $28.10 for a surgical in-hospital service.

The average number of Part B services per enrollee varies by sex, age, race, and marital status (CMS Table 2). It also varies by work status (which is reasonable if work status is related to health). Persons with some college education (13+ years of school) used slightly fewer services than those with grade school or less. However, persons with the highest incomes used the most services of any income group except for those under $1,000. (In between the variance was not monotonic.) (CMS Table 3.) Urban service use is higher than rural in each region. The variation in use between regions, though, is different for the urban and rural aged.

Utilization is highly related to health limitations and perceived health status (CMS Table 6). Institutional residents use far more services than those living outside; for the latter, specific living arrangements affect rate of use too (CMS Table 7). For 5-year age groups over 65, charges for covered physicians' services of specific types do not have the same variation as the average charges for all covered services, reflecting, evidently, differences

1/ Strictly speaking these figures do not show expense per aged person, since about 23% of the population in the 'aged' households are under 65 and a relatively small number of aged persons dwell in households where the head is younger, usually 45-64. However, 95% of aged persons living in families are estimated to be in the aged-head families described above.

2/ Quoted by courtesy of Professor Elizabeth J. Coulter, University of North Carolina. Tables from her study are identified for reference as CMS Tables.

in place and type of care (shift to nursing homes, less use of offices and clinics). There is more surgery at 75-79 years of age and after 85 years than in other age groups, as measured by charges.

A consistent relationship between size of urban place and charges for office services per enrollee is shown, the gross urban-rural contrast being more than what can be explained by number of services. Suburbs near large cities have the highest charge levels. (CMS Table 10.) There is little variation for office service charges by age up to age 85,when there is a shift to home, nursing home, and in-hospital surgical charges. (CMS Table 8.)

Utilization By Aged As Shown By National Center for Health Statistics (NCHS) Data

According to 1971 figures from the Health Interview Survey (HIS), aged persons account for 129,600,000 physician visits excluding in-hospital visits but including telephone consultations, or 13.0% of the total for all ages, and within this, 98,400,000 office visits, or 14.2% of the total (1).

National Ambulatory Medical Care Survey (NAMCS) data show that aged persons in 1973-74 account for 15.5% of all office visits (2).[1/] They account for 43.8% of office visits for diabetes mellitus, 44.7% of all those for circulatory diseases (54.9% of visits for chronic ischemic heart disease and 38.6% of those for essential benign hypertension), 36.5% of all visits for arthritis and rheumatism, 36.0% of visits for eye conditions, and 31.4% of all visits for neoplasms. They also account for 21.2% of visits for digestive system diseases. Together these conditions make up 137,994,000 visits or 21.4% of those for all diagnoses combined.

The same source shows that aged persons make up 29.3% of all internal medicine office visits (74,693,000), 18.0% of 44,846,000 general surgery office visits,

1/ For 1975, this figure was 16.4% of the total of 567,600,000 visits (3, p. 4.)

and 19.2% of 88,227,000 visits to other surgical specialties (excluding general surgery and gynecology.) Their visits to general and family practitioners account for 16.8% of all visits to these physicians. Total visits to these four groups by the aged account for 90,629,000 visits. The GP or family practitioner visits account for 48.3% of all visits of the aged to these four groups and 43.7% of all aged persons' office visits.

The relation between chronic conditions and use of services by the aged is shown in Health Interview Survey (HIS) data. Analysis of health characteristics of persons with chronic conditions in 1974 shows that aged persons with at least some activity limitations accounted for 39.3% of all aged persons and 3.9% of the whole population. These 8,146,000 persons accounted for 56,441,000 office visits and this is equal to 53.4% of all visits in 1974 for that age group and 8.0% of office visits for all ages.

NAMCS statistics indicate that only 7.5% of aged persons were being seen for the first time, compared to 15.6% of all age groups, and only 13.7% had been seen before for another problem, compared to 22.9% for all ages. Fully 78.8% of visits were repeat visits for the same problem, whereas only 61.5% of visits for all age groups were of this type. These relationships hold for men and women, and for whites and other races.

Aged persons' problems were rated as serious or very serious more often than those of other age groups - 25.1% and 6.3% respectively compared to 16.0% and 3.2% for all age groups. Compared to all ages, slightly more of visits of the aged lasted over 10 minutes.

Office visits are an incomplete measure of the aged share of physician services because of in-hospital services and nursing home visits. In-hospital medical services can be inferred from the high rate of hospitalization for persons at age 65 and over (16.0% compared with 12.5% for all ages), especially

high (37.7%) for those with full activity limitation (4 Series 10 No. 112, pp. 16, 17). Hospitalizations of aged persons with such limitations account for 7.0% of all hospital discharges and 11.9% of all hospital days for the total population. For non-surgical patients this would imply in many cases daily visits and services by physicians. A figure from 1973 shows that 64.6% of hospital days after age 65 were consumed by non-surgical cases.[1/] If it is assumed that these had a daily visit, then as many as 54,410,000 such visits would be delivered and this figure is equal to 55.3% of all office visits for aged persons or 34.7% of office plus hospital combined.[2/]

Aged Share of Surgical Market

In 1973, 2,855,000 operations were performed on persons aged 65 and over in short-stay hospitals, or 15.5% of all operations performed on all age groups.[3/] A little over 1,000,000 (36.7%) of these operations for the 65 and over age group consisted of the 20 leading procedures for all age groups. For all ages, 7,479,000 operations (40.6%) consisted of these procedures; hence the aged share of the 20 leading procedures was 14%. However, for individual procedures in the top 20, the aged share varied enormously (Table 3-2).

1/ Patients with surgery represented 41.8% of all persons hospitalized in 1974 but only 30.0% for those age 65 and over (5 Series 13 No. 26, p. 13 (NCHS). Figures for 1976 were similar. Of patients discharged from short stay hospitals, 41.4% had undergone surgery. For patients age 65 and over, the rate was 30.5% (6 Series 13 No. 37, p. 12).

2/ This is very close to the proportion of internist visits to inpatients (all ages) compared to total internist visits for office and hospital combined, calculated from figures reported in the 1975-76 AMA Profile of Medical Practice (7). (The comparable figure for general practitioners is 17.2%.)

3/ In 1976, 20,086,000 operations were performed in short-stay hospitals, of which 3,378,000 or 16.8% were on patients 65 or over (6).

That is, aged patients received 70.3% of all prostatectomy and 67.7% of all lens extraction operations - but less than 5% of appendectomy, oophorectomy, hysterectomy and diagnostic dilation and curettage of uterus. Among the top 20 procedures, prostatectomy, lens extraction, and, at some distance, reduction of fracture with fixation, cholecystectomy and repair of inguinal hernia were the leaders for the aged.

However, nine procedure groups that were among the top 22 in frequency for aged persons do not appear among the top 20 for the general population. These nine procedures, along with their frequencies (in thousands) and rank, are listed below.

Operative Category	Frequency (000)	Rank in Top 22 for 65 +
Resection of small intestine or colon	64	7
Local excision and destruction of lesion of bladder	60	8
Neurosurgery	54	10
Ileostomy, colostomy and other enterostomy	34	13
Complete and radical mastectomy	31	15
Arthroplasty of hip	28	17
Operations on muscles, tendons, fascia and bursa	23	18
Vasectomy	23	19
Local excision and destruction of lesion of rectum and anus	21	20

These procedures have a total frequency of 338,000 or 1.8% of all operations performed. The 22 most frequent operations for the aged amount to 1,373,000 operations or 7.5% of all operations performed at all ages, and account for 48% of all surgery received by aged persons. For the top 20 procedures for all ages, the aged share was 5.6% of all operations performed.

Whereas performance of a given procedure may involve different risks and protections when an older patient is involved, the fee is usually the same as for a younger patient. For a procedure such as appendectomy, where signals of disease are often not perceived by the aged until the condition is more advanced, if complications attend the surgery, the surgeon can be reimbursed for these.

Nursing Home Residents

While no direct measure of the actual use of physician services by nursing home residents is readily available, the charge for nursing home care averaged $7.10 per enrollee, a figure equal to 9.2% of out-of-hospital physician services and 4.3% of all physician services covered under Part B. (CMS Table 1.)

In 1969, 722,264 nursing home residents age 65+ are reported (8 NCHS Series 12 No. 22, p. 13) or under 4% of all aged in 1970 (9 Statistical Abstract of the US 1974, p. 6). If they had monthly visits, a conservative assumption in view of the prevalence of 3.4 chronic conditions per resident (10 NCHS Series 12 No. 24, p. 8), that would equal 8,671,500 visits. This would be roughly 9% of office visits by the aged in 1971. Physician services are generally provided by physicians who are not at the institution full-time, and who visit the home regularly or as needed. Only 2.1% of homes reporting for 1968 indicated that medical care is usually provided at the physician's office, and 7.6%, that care is provided by full-time doctors (11 NCHS Series 12 No. 14, p. 6).

To sum up, the figures on utilization indicate 1) that the aged share in the market for different specialties is variable, 2) that they tend to have visits related to chronic problems and require or use many repeat visits for a given condition, 3) that they use general or family practitioners for a considerable portion of their care, 4) that hospital visits form a substantial subset of physician services for the aged, and 5) that the Medicare population forms a significant portion of the market for certain surgical procedures, whereas others affect the aged little or not at all, and still others are virtually confined to aged patients. These are some salient features of the market into which discretionary practices relating to formation of customary charges, differentials between GPs and specialists, handling of hospital visits relative to office visits, etc., are absorbed. Such practices also interact with geographic differences in the Medicare market. Geographic variation in Medicare expenditure reflects price levels, utilization, and resource availability.

Distribution of low-income aged adds another factor to Medicare variation across the United States. In 1969, 1.2 million Public Assistance (PA) recipients were enrolled in SMI as 'buy-ins'. They represent over 11% of all SMI beneficiaries living in buy-in states (there are 40 such states plus D.C., Guam and the Virgin Islands). Forty percent of the PA enrollees live in the South even though 5 Southern states do not have buy-in agreements. PA enrollees tend to be older than other SMI enrollees, and have higher percents women and nonwhites. The per capita reimbursement for SMI services to 'buy-ins' was almost 20% greater than for other SMI enrollees in the same areas, which is attributed to old age, high rates of chronic illness among the elderly poor, and the selection of blind and disabled persons into the buy-in category. Seven states with buy-in agreements do not have Medicaid but reimburse under

public assistance programs, generally reaching fewer individuals than states with Medicaid (12).

According to a 1970 map showing, for each county, whether local population has been declining or rising and whether the percent of aged is low or high, there are counties that are heavily rural, with a long history of out-migration and a large population of elderly persons. Presumably medical resources would be scarce. This large area contains "islands" of counties with medium-sized cities and some recent growth. There are other counties with recent growth concentrated in retirement ages, and still others with a history of population decline and few elderly - e.g., ski country, and former farmlands becoming suburbanized.

Other counties formerly based on a youthful labor force lost population in 1970 from economic difficulties (although the loss may be temporary) and have relatively few elderly residents. Suburban areas in the Northeast and Midwest have growing populations and few aged, as do Southern metropolitan areas.

In areas with few aged, physician practices and customary fees would tend to be based on large percentages of younger groups, while the opposite would be true in areas with numerous aged. At the same time, population growth appears to be a factor in physician location (13 p. 282). The economic context of medical practice, as well as community amenities secured through taxation, would be different for population growth with high and low percents of aged.

Table 3-1

Selected Items from the National Ambulatory Medical Care Survey: 1973 Summary Relating to Persons Age 65 and Over

Visits

All Patients (in thousands)	Patients Aged 65 & Over (in thousands)	Percent Aged 65 & Over of All Patients	Number of Visits Per Person Per Year (Aged 65 & Over)
	100,249	15.5%	4.9

Distribution of Office Visits by Prior Visit Status

All Visits	Patient seen for first time	Patient Seen Before For Current Problem	Patient Seen Before For Another Problem
100.0%	7.5%	78.8%	13.7%

Seriousness of Patient's Principal Problem

All Visits	Very Serious	Serious	Slightly Serious	Not Serious
100.0%	6.3%	25.1%	34.7%	33.9%

Office Visits by Time Actually Spent with Physician

All Visits	Zero Minutes	1-5 Minutes	6-10 Minutes	11-15 Minutes	16-30 Minutes	31 Minutes or More
100.0%	2.3%	12.0%	30.2%	28.2%	21.3%	5.8%

Office Visits According to Physician Specialty

All Visits	General and Family Practice	Medical Specialties	Surgical Specialties	Other Specialties
100.0%	43.6%	27.0%	25.7%	3.7%

Source:
The National Ambulatory Medical Care Survey: 1973 Summary, Vital and Health Statistics: Series 13, No. 21, Data from the National Health Survey; (DHEW Publication No. (HRA) 76-1772), Tables 1, 2, 4, 22, 24, and 29; pp. 11, 12, 14, 34, 36, and 41 respectively.

Table 3-2

The 20 Most Frequent Operative Procedures for All Ages and For Persons Aged 65 and Over, 1973 [a/]

Operative Procedures	Frequency [b/] (000)		Aged Frequency As A Percent of Total Population Frequency	Procedures As A Percent of All Procedures	
	All Ages	Aged 65 and Over		All Ages	Aged 65 and Over
All Operative Procedures	18,246	2,855	15.50 %	100.00 %	100.00 %
20 Most Frequent Operative Procedures	7,479	1,048	14.01	40.59	36.71
1. Dilation and curettage of uterus, diagnostic	934	40	4.28	5.07	1.40
2. Hysterectomy	690	31	4.49	3.74	1.09
3. Tonsillectomy with adenoidectomy	638	*		3.46	
4. Repair of inguinal hernia	525	104	19.81	2.85	3.64
5. Excision of lesion of skin & subcutaneous tissue	455	75	16.48	2.47	2.63
6. Oophorectomy; salpingo-oophorectomy	425	20	4.71	2.31	.70
7. Cholecystectomy	411	97	23.60	2.23	3.40
8. Appendectomy	339	13	3.83	1.84	.46
9. Closed reduction of fracture without fixation	321	59	18.38	1.74	2.07

Table 3-2 (continued)

The 20 Most Frequent Operative Procedures for All Ages and For Persons Aged 65 and Over, 1973 [a/]

Operative Procedures	Frequency [b/] (000) All Ages	Frequency [b/] (000) Aged 65 and Over	Aged Frequency As A Percent of Total Population Frequency	Procedures As A Percent of All Procedures All Ages	Procedures As A Percent of All Procedures Aged 65 and Over
10. Ligation and division of fallopian tubes (bilateral)	299	*		1.62%	
11. Reduction of fracture with fixation	284	140	49.30 %	1.54	4.90%
12. Extraction of lens	279	189	67.74	1.51	6.62
13. Dilation and curettage after delivery or abortion	273	----	----	1.48	----
14. Prostatectomy	249	175	70.28	1.35	6.13
15. Tonsillectomy without adenoidectomy	247	*		1.34	
16. Caesarean section	246	----	----	1.34	----
17. Dilation of urethra	227	52	22.91	1.23	1.82
18. Hemorrhoidectomy	218	20	9.17	1.18	.70

Table 3-2 (continued)

The 20 Most Frequent Operative Procedures for All Ages and For Persons Aged 65 and Over, 1973 a/

Operative Procedures	Frequency (000) All Ages	Frequency (000) Aged 65 and Over	Aged Frequency As A Percent of Total Population Frequency	Procedure As A Percent of All Procedures All Ages	Procedure As A Percent of All Procedures Aged 65 and Over
19. Myringotomy	215	*		1.17%	
20. Plastic repair of cystocele and/or rectocele	204	33	16.18%	1.11	1.16%

a/ The procedures selected are those most frequently performed on the population as a whole.

b/ The data reflect all-listed operations and so include multiple operations in an admission.

* Figure does not meet standard of reliability or precision.

---- Quantity zero

Source: Surgical Operations in Short-Stay Hospitals, United States - 1973, Vital and Health Statistics: Series 13, No. 24, Data from the National Health Survey (DHEW publication, No. (HRA) 76-1775), pp. 26-27.

Table 3-3

a/

Discharged from Short-Stay Hospitals, 1973 and Number of Hospital Care Days for All Ages and for Persons Aged 65 and Over

Discharges	Total Discharges (000) b/		Aged Discharges As A Percent of All Discharges	Average Hospital Stay (In Days)		Total Hospital Days (000)		Aged Hospital Days As A Percent of All Hospital Days
	All Ages	Aged 65 and Over		All Ages	Aged 65 and Over	All Ages	Aged 65 and Over	
All Discharges	32,125	6,937	21.6%	7.8	12.1	250,575	83,938	33.5%
Without Surgery	18,859	4,858	25.8	7.6	11.2	143,328	54,410	38.0
With Surgery	13,266	2,079	15.7	7.9	14.3	104,801	29,730	28.4
Percent with Surgery	41.3%	30.0%				41.8%	35.4%	

a/ Excludes newborn infants and Federal hospitals.

b/ Includes data for sex not stated.

Source: Surgical Operations in Short-Stay Hospitals, United States - 1973, Vital and Health Statistics: Series 13, No. 24, Data from the National Health Survey (DHEW Publication No. (HRA) 76-1775), pp. 2 and 20, Table A and R.

TABLE 3-4

Reimbursement for Hospital and Medical Insurance (Medicare) by census region, division, and state of residence for all persons, and persons aged 65 and over: United States, 1974

State	All persons	Persons aged 65 and over
	Amount in dollars	
United States	471	467
Northeast	548	544
North Central	456	451
South	397	395
West	527	516
New England	566	561
Middle Atlantic	542	539
E. No. Central	468	463
W. No. Central	432	426
So. Atlantic	417	415
E. So. Central	341	339
W. So. Central	402	401
Mountain	429	423
Pacific	557	545
Maine	412	409
New Hampshire	419	417
Vermont	485	482
Massachusetts	618	614
Rhode Island	569	565
Connecticut	574	562
New York	625	623
New Jersey	508	497
Pennsylvania	439	436
Ohio	434	431
Indiana	416	409
Illinois	473	468
Michigan	550	548
Wisconsin	452	441
Minnesota	510	498
Iowa	395	389
Missouri	405	403
No. Dakota	462	477
So. Dakota	383	377
Nebraska	392	387
Kansas	448	443
Delaware	474	465
Maryland	515	506
Dist. of Columbia	611	612
Virginia	370	368
W. Virginia	318	327
No. Carolina	349	344
So. Carolina	321	319
Georgia	364	359
Florida	479	475
Kentucky	336	335
Tennessee	346	341
Alabama	337	335
Mississippi	343	345
Arkansas	312	316
Louisiana	341	347
Oklahoma	401	400
Texas	443	438
Montana	370	368
Idaho	402	398
Wyoming	357	355
Colorado	463	455
New Mexico	399	398
Arizona	464	458
Utah	327	325
Nevada	578	560
Washington	401	395
Oregon	414	409
California	606	593
Alaska	507	499
Hawaii	453	429

Source: Unpublished data from the Social Security Administration

Table 3-5

NUMBER OF DOCTORS AND FREQUENCY OF OPERATIONS PERFORMED

BY PRIMARY PHYSICIAN SPECIALTY CY 1970

Category	N	% Of Total	Operations Performed	% Of Total	Mean No. Of Operations Performed
Board-certified surgical specialists	834	31	148,926	52	179
Non-certified surgical specialists	450	17	62,251	22	138
Medical specialists	583	22	4,994	2	9
General practitioners	732	27	34,745	12	47
Osteopathic surgeons	83	3	5,363	2	65
Osteopathic physicians	18	1	439	0	24
Interns and residents	-	-	27,037	10	-
TOTAL	2,700	100	283,755	100	105

Source: Study on Surgical Services for the United States, Surgery in the United States, A Summary Report of the Study on Surgical Services for the United States, sponsored jointly by The American College of Surgeons and the American Surgical Association, 1975, Tables 12 and 13, p. 39.

Table 3-6

FREQUENCY OF PERFORMANCE OF NINE SURGICAL PROCEDURES

INCLUDED IN IL 74-19, PER SPECIALIST, 1970

	Procedure Name	Percent of All Surgical Procedures (1)	Average Frequency Per Specialist (2)
1	Reduction of fracture - neck of femur	.08	11.8
2	Bronchoscopy	.03	17.8
3	Appendectomy	.01	8.6
4	Hemorrhoidectomy	.01	44.4
5	Cholecystectomy	.06	11.3
6	Inguinal hernia	.10	16.8
7	Prostatectomy-transurethral	.15	29.2
8	Hysterectomy-vaginal	.01	7.8
9	Lens extraction	.34	31.0

Sources:

Column (1) Economic Index Impact Survey, Region II.

Column (2) Surgery in the United States, A Summary Report of the Study on Surgical Services for the United States, sponsored jointly by The American College of Surgeons and the American Surgical Association, 1975. Tables 21-30, pp. 47-54.

References - The Medicare Market

1. Physician Visits, Volume and Interval Since Last Visit, United States-1971, Vital and Health Statistics: Series 10, No. 97, Data from the National Health Survey (DHEW publication No. (HRA) 75-1524), Health Resources Administration, National Center for Health Statistics, Rockville, Md., March 1975.

2. The National Ambulatory Medical Care Survey: 1973 Summary, United States, May 1973-April 1974, Vital and Health Statistics: Series 13, No. 21, Data from the National Health Survey (DHEW publication No. (HRA) 76-1772), Health Resources Administration, National Center for Health Statistics Rockville, Md., October 1975.

3. The National Ambulatory Medical Care Survey: 1975 Summary, United States, January-December 1975, Vital and Health Statistics: Series 13, No. 33, Data from the National Health Survey (DHEW publication No. (PHS) 78-1784), Health Resources Administration, National Center for Health Statistics, Hyattsville, Md., January 1978.

4. Health Characteristics of Persons with Chronic Activity Limitation, United States-1974, Vital and Health Statistics: Series 10, No. 112, Data from the National Health Survey (DHEW publication No. (HRA) 77-1539), Health Resources Administration, National Center for Health Statistics, Rockville, Md., October 1976.

5. Utilization of Short-Stay Hospitals: Annual Summary for the United States, 1974, Vital and Health Statistics: Series 13, No. 26, Data from the National Health Survey (DHEW publication No. (HRA) 76-1777), Health Resources Administration, National Center for Health Statistics, Rockville, Md., September 1976.

6. Utilization of Short-Stay Hospitals: Annual Summary for the United States, 1976, Vital and Health Statistics: Series 13, No. 37, Data from the National Health Survey (DHEW publication No. (PHS) 78-1788), Health Resources Administration, National Center for Health Statistics, Rockville, Md., June 1978.

7. Profile of Medical Practice, 75-76, Center for Health Services Research and Development, American Medical Association, James R. Cantwell, Editor.

8. Chronic Conditions and Impairments of Nursing Home Residents: United States-1969, Vital and Health Statistics: Series 12, No. 22, Data from the National Health Survey (DHEW publication No. (HRA) 74-1707), Health Resources Administration, National Center for Health Statistics, Rockville, Md., December 1973.

References - The Medicare Market (continued)

9. Statistical Abstract of the United States: 1974, U.S. Bureau of the Census (95th edition), Washington, D.C., 1974.

10. Measures of Chronic Illness Among Residents of Nursing and Professional Care Homes, United States, Vital and Health Statistics: Series 12, No. 24, Data from the National Health Survey (DHEW publication No. (HRA) 74-1709), Health Resources Administration, National Center for Health Statistics, Rockville, Md., March 1974.

11. Charges for Care in Nursing Homes, United States, 1968, Vital and Health Statistics: Series 12, No. 14, Data from the National Health Survey (DHEW publication No. (HSM) 72-1037), Health Services and Mental Health Administration, National Center for Health Statistics, Rockville, Md.

12. Health Insurance Statistics, Social Security Administration, Office of Research and Statistics, (DHEW publication No. (SSA) 73-11702), July 5, 1973.

13. Medicare-Medicaid Reimbursement Policies, Social Security Studies Final Report, Institute of Medicine of the National Academy of Science Publication 76-01, U.S. Government Printing Office, Washington, D.C., 1976.

Medicare Regulations: A Topical Review

A review of the Medicare program since its enactment on July 30, 1965 as Title XVIII of the Social Security Act shows some elements of stability, some of change. The basic structure has endured: private provision of medical service for the elderly under coverage by two complementary government insurance programs, Hospital Insurance (Part A) and Supplementary Medical Insurance (Part B) administered by carriers under HEW guidelines. By the 1972 amendments to the Social Security Act, health service insurance coverage was extended to disabled beneficiaries under Social Security and Railroad Retirement programs and also to persons under age 65 who require dialysis or kidney transplants, and the program became officially known as Health Insurance for the Aged and Disabled. The amendments also provided that persons can have their covered health care provided by Health Maintenance Organizations.

Part B coverage, the major area of this study, continues to require voluntary enrollment with certain restrictions designed to prevent individuals from entering and leaving the system at will and thereby potentially posing a risk of bankrupting the system. The costs of SMI are met by premiums paid by or on behalf of enrollees matched by grants from the general revenue of the federal government. Premiums, originally set at $3 per month, have risen, owing to increased utilization, rising costs and extended coverage, to $8.20 per month. (The Federal matching rate, originally set at 100% has become over 200%.) With certain restrictions, covered benefits include medically necessary services by physicians and osteopaths, diagnostic tests, radiation treatments, various medical supplies and equipment, prosthetic devices, ambulance service, drugs, home health visits and some physical therapist and chiropractor services. The original list of covered services was expanded somewhat by the 1972 amendments. Charges for covered services are, with some exceptions, met by SMI to the extent of 80 percent of allowed charges after a deductible of $60 per calendar year (originally $50) has been met.

Under Part B insurance, except for group practice prepayment plans, which generally negotiate directly with HCFA,[1/] the allowed Medicare charge for service is determined by carriers under DHEW regulations. This determination is known as the reasonable charge process. As background to our findings about the influence of carrier practices on physician fees under Medicare, the next few paragraphs briefly summarize the development of the reasonable charge process for physician services.

Under Title XVIII, the Secretary of DHEW contracts with carriers which are responsible for determining reasonable charges for medical services under Medicare and the charge to be allowed on particular claims and to make payment of 80% of the reasonable charge for covered medically necessary services. Payment is made to the beneficiary unless the right to benefits is assigned to a provider who accepts assignment and thereby agrees to accept the Medicare allowed charge as the total payment for a service.

The philosophy of Title XVIII of the 1965 act is that Medicare should not interfere with the patterns of practice of medicine in a community. In determining reasonable charges, carriers were directed to consider the customary charges by a physician for similar services as well as the prevailing charges in a locality. Government underwriting of health care for the elderly and certain disabled together with minimal interference in medical practice continues as the official philosophy of the Medicare program. However, in response to changing conditions and also to administrative realities, the loosely worded legal guidelines often became standardized through regulations.

1/ Medicare supervision was originally under the jurisdiction of the Social Security Administration (SSA). With the reorganization of the Department of Health, Education and Welfare in 1977 it is now under the direction of the Health Care Financing Administration (HCFA), whose administrator reports directly to the Secretary of DHEW. Both Medicaid and Medicare, as well as related quality control programs, are under his jurisdiction. HCFA remains in close association with SSA, which is responsible for disability, retirement, survivor and other aspects of the Social Security law.

By 1971 the Social Security Administration had instructed carriers that the reasonable charge for a service was to be the lowest of the submitted charge, the customary (or median of a physician's billed fees for a given service), and the prevailing fee for a service, the latter being defined as the 75th percentile of the weighted customaries of charges by physicians in a locality. Except for unusual circumstances, customaries for a fee year were to be determined annually at the beginning of the fiscal year based on the charges for services rendered during the previous calendar year. Incorporation of these administrative policies into law in Sec. 224 of PL 92-603, known as the 1972 amendments to the Social Security Act, formalized the policy underlying the 1965 law and spelled out the process of identifying which fees reflected existing medical markets.

Even under these more precise guidelines for reasonable charge determination, experience showed that opportunity remained for carriers to apply different criteria, the differences having varying possibilities of impact on allowable fee levels. Revisions in the Medicare Part B Carriers Manual issued in April 1977 required among other matters that at least three charges where two are identical or four different charges are required to establish a customary. To establish a prevailing, five customaries are required. When a physician has too few charges to form a customary fee for a given procedure, at least seven customaries for other procedures in the category of service in which the given procedure is classified are needed to create a conversion factor for determining the physician's customary fee. As in the case of the regulations incorporated in the 1972 amendments, these 1977 regulations improved the rules for carrying out the basic Medicare policy. They removed

some carrier discretion and in that sense embody more government control, but they did not represent a strong modification of the workings of the private medical market. However, also included in section 224 was a significant departure from the design of the 1965 law. Allowable Medicare fees were no longer simply to reflect local medical markets. The 1972 law specified that a ceiling was to be placed on Medicare fees. Locality prevailing charges derived by the standard method were now to be controlled by a national economic index based on operating expenses and earning levels of physicians.

Partly because of the Economic Stabilization Program, which was applied in the interim, regulations to implement this part of Section 224 were not issued by DHEW until April 1975. In instructions known as IL 75-17 the index for FY 1976 was set at 1.179 (FY 1973 charges = 1.00) and directions were given for application of the index. Carriers are instructed to determine maximum allowable prevailings by service, specialty, and locality by multiplying the corresponding 1973 charge by 1.179. Where no directly comparable 1973 prevailing charge screen existed, a substitute 1973 screen was to be calculated using one of six specified methods.

Application of the index unexpectedly resulted in a FY 1976 fee level below that of FY 1975 in many cases. As a result laws (PL 94-182 and PL 94-368) were passed requiring that no prevailing fee levels would be set below their 1975 counterparts in FY 1976 or succeeding years and extra reimbursements would be made in cases where payment had been based on prevailing fee levels below FY 1975 levels. Thus FY 1975 levels became the floor for future prevailings.

For FSY [1/] 1977, 1978 and 1979 the indices were raised from the 1.179 set for FY 1976 to 1.276, 1.357, and 1.426 respectively. Because to date these indices have reflected national levels of physician earnings and expense trends and are applied locally, and, more fundamentally, because they embody the concept of placing a lid on local fees, they mean that allowed charges under Medicare no longer are designed to reflect fees in local markets.

In addition to the Economic Index, other instances of modifications of the standard reasonable charge process are surfacing. These occur especially in reference to new medical techniques or emerging modes of delivery of health care and represent some departure from the customary-prevailing method of setting Medicare fees. For instance, computer tomographic head scans have been covered since 1976 if their use is consistent with the diagnosis entered. In addition to the usual reasonable charge criteria, carriers were urged in December 1977 to respect a $150 ceiling. According to HCFA, a ceiling is in accord with the reasonableness provision of the regulations, which states that "other factors may be found necessary and appropriate with respect to a specific service" in judging if a charge is reasonable. Another case where

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1/ Starting with FSY 1977 the term fee screen year (FSY) is used instead of fiscal year (FY). The starting date of the federal fiscal year had been changed to October but, as enacted in PL 34-368, July was retained as the start of the Medicare fiscal year because a change to October would have meant an even longer delay between the submission of charges on which prevailings are based and the time period to which they are applied in claims processing.

the RCP is modified is renal dialysis. Fees for physicians who have chosen to be paid monthly for attending dialysis patients are to be based on application of conversion factors to customary charges for follow-up office visits up to a maximum of $12 per visit. In determining reasonable charges for acute or non-maintenance dialysis treatments, carriers have used various methods, including hourly rates, the usual customary and prevailing charge screen method, and a flat fee approach. HCFA is attempting to standardize the approach and has surveyed carriers concerning their methods. A further example of modification of the reasonable charge process relates to pricing of services by Comprehensive Health Care centers. According to an instruction of April 1978, regional offices are to continue to apply reasonable cost screening guides previously described in 1974, but no charge is allowed if it exceeds the maximum allowed for the state in which the center is located.

One additional recent development regarding fee determination should be noted. When customaries and prevailings are used to determine reasonable charges, an alternative method is needed for cases in which there are not enough charges to form a customary. Application of conversion factors to a relative value scale has been an approved substitute. This method is based on the ratio of a doctor's known customary charges for other procedures in a general category to a Relative Unit Value Scale. The charge so derived is compared to the locality prevailing for a procedure to determine the reasonable charge. However, because of consent agreements obtained by the Federal Trade Commission from the American College of Radiology, the American College of Obstetricians and Gynecologists, the American Academy of Orthopedic Surgeons, the California Medical Association, and the Minnesota Medical Association, some relative values can no longer be used. Carriers

have been instructed that for these three specialties, gaps in customary charge screens must be filled by use of the 50th percentile of weighted customary charges for a procedure. This is a step away from fee leadership by national organizations of specialists towards unhampered local influence on Medicare fee determination and also away from standardization.

Although the reasonable charge process has, except in ways noted above, retained the original general design, policies devised to implement the vaguely outlined system more strictly or precisely to meet unforeseen situations may in effect also have modified the Medicare pricing process. These policies, publicized in guidelines, directions and information requests from HCFA to regional Medicare directors and to carriers[1/], fall into several categories. They concern: the process of reasonable charge development and carrier practices involved, the administration of claims processing by carriers, beneficiary, provider and public access to information, and enforcement. In addition, HCFA has been developing procedures regarding utilization control.

The first of these areas, the process of developing a schedule of reasonable charges, involves several central elements which were not sharply defined in the original law and which left carriers many areas of discretion in determining reasonable price. As already noted, by law and regulations, the dates of claims on which reasonable charges were to be based, the frequency

1/ Directions to regional offices are generally called IMs, identical memoranda; intermediary letters (ILs) are addressed to carriers.

of update, the definition of customary charges and the minimum numbers of charges on which they are based,and the numbers requirements for prevailings have now been specified. However, only general principles have been issued regarding the delineation of a locality (even though written approval by HCFA is required for a change by the carrier) or the consideration of non-Medicare charges in determining fees. How physicians are to be classified for purposes of prevailing charge determination also has not been mandated. In a memorandum known as IM 75-53,[1/] regional officers were requested to report on methods used by individual carriers in determining reasonable charges and to evaluate the compliance of carriers with regulations. Analysis of answers to IM 75-53 revealed areas of ambiguity in the questionnaire itself as well as variation in carrier interpretation of Medicare requirements. In a revised questionnaire issued in October 1977 as IM 77-76,regional offices are requested to submit information about carrier performance in developing FSY 1978 charge screens. IM 77-76 is very similar to 75-53 but several questions have been added concerning especially carrier procedure coding and determination of specialist status. Application of the economic index, conformity with the FTC consent decree, medical record reviews, and pricing of claims for service in teaching settings are among other matters which are now covered more carefully than in the previous questionnaire.

Although IM 75-53 and 77-76 are simply means of gathering information, increasingly complete and precise knowledge of carrier behavior in fee determination not

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1/ See Chapter 6.

only should promote compliance, but may be the first step to further regulation or at least guidance from HCFA about aspects of the fee determination process that have been flexible. Issuance of more precise directions to carriers administering Medicare is not equivalent to a basic policy change. However, increased standardization or stricter rules may in fact modify fee levels significantly.

Like reasonable charge determination, carrier handling of claims processing also is not a static process. This responsibility has several aspects, including bill processing, utilization review, provider reimbursement, beneficiary relations and fiscal management. These aspects of administration are qualitatively reviewed in what are known as ACERs or Annual Contractor Evaluation Reports. In addition, under the carrier "quality assurance program", through a review of a random sample of claims processed, carrier performance is periodically examined by the regional offices to determine if claims have been processed in conformity with regulations. Various types of processing or "occurrence" errors are distinguished and a rate of errors that altered payment or affected the deductible is separately calculated. Other indicators that are monitored by the carrier Performance Report (SSA-1565) include unit cost per claim processed, claims processed per 100 manhours, workload and claims pending measures. Appeals and hearings, rate of claims denied,and the reasons for denial are other facets of administration with which HCFA is actively concerned. Another aspect of administration, delayed audits of costs claimed by Medicare contractors, is now being given attention.

One provision of the Medicare Medicaid Anti-Fraud and Abuse Amendments (PL 95-142) authorized a comprehensive review of claims processing under Medicare and requires the Secretary of DHEW to set standards for determining if agreements with carriers should be renewed. Improved methodology is being developed for evaluating carrier performance.

In addition efforts are under way to uncover new improved ways of administering Medicare. Section 222 of PL 92-603 authorizes DHEW to engage in experimental trials of alternative administrative techniques. Experiments under a competitively bid fixed price contract and also a prospectively negotiated fixed rate per claim instead of the cost plus system have been undertaken. The administrative consequences of merging carrier territories are also under study. An analysis made by Systems Architects Incorporated under a contract with DHEW awarded in 1976 considered regionalization of data processing a desirable goal "if the government wishes to gain better control of systems development planning and performance evaluation" but felt that more planning was needed. Systems Architects did recommend a processing center experiment.

Contrary to the stirrings of standardization, however, maintenance support of the Part B model system, a claims data processing system designed by and used by many of the carriers,is being withdrawn by HCFA by no later than June 30, 1979. It is assumed that carriers now relying on Part B Systems Branch support will be requesting increased funds in order to be able to undertake maintenance responsibility of the Model B system.

In both refinement of reasonable charge development and tightening of the administration of claims processing, the gain in the clarity, standardization

and availability of information has been fundamental. Availability of Medicare information to the public and to individual beneficiaries and providers has also been improved. For many years, only prevailing charge data were open to the public and until July 1974, providers had restricted access to their own customary charge profiles. The government in the Sunshine Act (PL 94-409) now requires disclosure of such information as amounts of Medicare payment received by providers.

In other efforts to help the public and patients guard their rights, attention is being directed to improving the quality of contractor-prepared correspondence, including even the readability of the small print on claims forms explaining appeals machinery. In California an experiment has also been undertaken to notify beneficiaries monthly about the determination of their assigned claims. Free access to information, a basic assumption of a competitive system, tends to maximize the individual's opportunity to use the Medicare system effectively, and to serve as a deterrent to fee increases and a safeguard against fraud.[1/]

Aspects of evaluation of Medicare mentioned earlier include coverage and utilization of services. Monitoring of coverage has been evolving. Title XVIII of the Social Security Act amendments states that insurance coverage should be provided for medically necessary services. The utilization review machinery is still being developed. Professional Service Review Organizations (PSROs) are gradually assuming responsibility and regional offices are required to insure that direct dealing providers[2/] comply with the Utilization Review Committee requirements.

1/ A more direct deterrent to fraud was the passage in October 1977 of PL 95-142, which strengthens program penalties. Fraudulent acts under Medicare are now considered felonies.

2/ HMO's, etc. that are reimbursed directly by HCFA and are not under jurisdiction of a Part B carrier.

Manual regulations for utilization control have not been very specific and a coverage issues appendix has been added. In November 1977 a question was circulated to carriers surveying their control approaches.

Policies aimed at retarding overutilization are being refined. For instance, the program for second physician opinions prior to elective surgery is taking shape. Carriers have been instructed to pay claims for patient-initiated second medical opinions, including associated diagnostic tests. If the first and second physician do not agree, consultation with a third doctor is also covered. A consultation program has been instituted by DHEW to supply consumers with names of qualified physicians available for consultation. PSROs, county medical societies and insurance carriers will develop and maintain the lists and DHEW will publicize their availability.

In another effort at utilization control, IM 38 of November 1977 concerns the disallowance of 28 procedures of questionable value listed by the National Blue Shield Association. Blue Shield no longer routinely provides coverage for those procedures because they are ineffective, harmful or unnecessary.

Although coverage issues are not central in the fee-setting process, they play a part in delineating the services to which the pricing process is addressed, affect the total payments made by or on behalf of aged patients, and indirectly influence the fee level. Concern with coverage does not represent a deliberate departure from standard Medicare policy, but the more actively coverage is monitored, the more Medicare modifies the traditional private practice of medicine and also perhaps the closer the goal of quality health care for the aged comes to realization. 1/

1/ An instance of expansion of coverage to increase protection for the elderly is the extension under PL 95-210 of Medicare reimbursement to health clinics located in designated rural areas where the supply of physicians is insufficient. These clinics do not necessarily have a full-time physician on staff.

APPENDIX

Chronology of Medicare Part B Laws and Regulations Concerning:

- Coverage
- Premiums
- Fees

CHRONOLOGY OF REGULATIONS CONCERNING SMI COVERAGE AND BENEFITS

1965 Title XVIII of Social Security Law, PL89-97 Effective July 1, 1966

With a few exceptions, such as certain aliens, provides for voluntary participation of almost any person in the United States aged 65 or over. Benefits are not payable for services rendered abroad, even in cases in which HI (Part A) is applicable. Various regulations regarding enrollment periods are included, designed to prevent individuals from entering and leaving the program in ways that would unduly raise costs, as, for instance, according to the state of their health.

Provision is made for payment to the beneficiary or on his behalf for certain medical and other health services covering:

1) Physicians' services, surgical and nonsurgical, in home, office, hospital, and other institutions. Services of osteopaths are included.

2) Home health services up to 100 during a calendar year provided by certified home health agency following a plan outlined by a physician. Immediate previous hospitalization is not required, although it is required for home health services under HI.

3) Diagnostic tests and X-rays, radium and radioactive isotope therapy including cost of materials and services of technicians.

4) Supplies such as casts, colostomy bags, and surgical dressings.

5) Durable medical equipment rentals.

6) Prosthetic devices.

7) Ambulance service, if necessary (with limitations).

8) Drugs that cannot be self-administered and are necessary for the diagnosis or treatment of illness or injury.

PL 90-248 approved January 2, 1968

Instructs the Secretary of HEW to appoint an advisory council to study the need for coverage of the disabled under Title XVIII. Also requests a study of the feasibility of including additional services under SMI.

PL 92-603:1972 amendments to the Social Security Act

1) Effective July 1, 1973, extends Medicare coverage to the disabled and to covered workers and their dependents who have renal disease requiring dialysis or transplant and who choose to enroll. Persons entitled to cash disability insurance benefits for at least 24 consecutive months under social security or railroad retirement programs are covered.

2) Provides for services of a physical therapist in independent practice, furnished in his office or a patient's home, following a physician plan. Reimbursement is limited to $100 in a calendar year.

3) Covers certain services of licensed chiropractors.

4) For home health services, continues the deductible but removes the coinsurance requirement.

5) In connection with bills from independent laboratories that accept assignment based on rates negotiated by HEW, provides that no deductibles or coinsurance are required.

6) Raises the deductible to $60.

Extends HI to those otherwise ineligible if they enroll voluntarily, and are enrolled and pay premiums for SMI.

SOURCES:

1) Laws cited.
2) DHEW Publication No. (SSA) 76-11705, Medicare 1973.
3) Myers, Robert J., Medicare, McCahan Foundation Book Series, Bryn Mawr, Pennsylvania, 1970.

CHRONOLOGY OF MEDICARE PART B LAWS AND REGULATIONS CONCERNING PREMIUMS

1965 Title XVIII of Social Security Law, PL 89-97

Enacted in July 1965, became effective July 1, 1966. Supplementary Medical Insurance is to be financed by premiums paid into the Federal Supplementary Insurance Trust Fund by or on behalf of beneficiaries who choose to enroll and by matching grants from Federal general revenues. (In most cases, premiums are deducted from individuals' social security checks.) Premiums, which are required to be sufficient to cover half the costs of the program during the year to which they apply, were expected to be increased on July 1 each year to correspond to increased program costs. The initial premium was set at $3 per month for the period July 1966 through December 1967. The Secretary of HEW was required to determine and promulgate the premium for the next two year period before October 1, 1967.

PL 90-97 amendment to PL 89-97 Approved September 30, 1967

Extended first SMI enrollment period and deferred promulgation of a new rate and continued the $3 per month rate through March 1968. This amendment was passed because of pending legislation which was expected to make significant changes in benefits and other aspects of SMI.

PL 90-248 amendment to PL 89-97 Approved January 2, 1968

Among other provisions, enacted that the Secretary of HEW promulgate new premium rates in December of each year. The first of these premiums was to cover the period April 1968 through June 1969. The December 1967 premium was set at $4 per month. The increased amount was designed to meet the cost of the extended coverage provided by the 1967 law and also anticipated increases in fees and utilization. (Subsequent analysis found that the premium should actually have been set at $4.30.)

For the period July 1969 through June 1970 the Secretary of DHEW ordered that the rate remain at $4 per month. Secretary Cohen froze the rate at $4 per month despite actuarial recommendations that it be set at $4.40-$4.50 and accompanied this with an attempt to freeze physician fees. (Subsequent calculations undertaken when premiums for July 1970 were being considered found that the rate should have been set at about $4.60-$4.70.)

December 1969

Secretary of HEW Finch promulgated that the rate for July 1970 through June 1971 be $5.30 per month. This was the figure recommended by actuaries of the Social Security Administration and was more than offset by increased benefits to social security recipients.

December 1970

Premium for July 1971 through June 1972 was set at $5.60.

December 1971

Premium for July 1972 through June 1973 set at $5.80.

December 1972

Premium for July 1973 through June 1974 set at $6.30 (However, on June 14, 1973 the President announced a price freeze for 60 days. Therefore, the new rate did not become effective until mid-August. The full premium rate of $6.30 was in effect starting September.)

1972 Public Law 92-603

After July 1973, premiums are to be the lesser of the actuarially determined rate for enrollees 65 and over and a rate limited to a percentage increase over the previous year which may not exceed the percentage by which cash social security benefits increase - whether automatically because of a general rise in prices or because of benefit increases enacted by Congress, even though the original intent was that premiums cover half the cost of SMI. Beneficiaries covered because of disability or as end-stage

renal disease patients pay the same premium as the aged enrollees even though the cost of their protection is greater.

December 1973

Premium for July 1974 through June 1975 set at $6.70.

1973 Public Law 93-233 enacted December 31, 1973.

Modified the schedule for automatic increases in social security cash benefits but failed to make corresponding changes in the provisions relating to percentage increases in Part B premiums. If premiums are frozen, the portion paid from general revenue has to rise as costs rise unless coinsurance or deductibles are increased.

December 1974

Premium for July 1975 through June 1976 set at $6.70---frozen because of inadvertent omission in PL 93-233.

1975 Public Law 94-182 Sec. 104 enacted December 13, 1975.

Changing the date used in arriving at percentage increases from one year to the next in social security benefits from June 1 to May 1 permits the SMI premium to be increased. The premium would continue to be promulgated in December. The increased premium would be deducted from the benefit check that reflects the benefit increase and so would not result in smaller monthly benefit checks. No attempt is made in the law to "catch up" to benefit increases in the year during which premiums were frozen. Premiums for the period starting July 1, 1976 will reflect only one year's increase in cash benefits. Premium will be set at $7.20, and deducted on the same date that benefit checks increase by about 8 percent because of automatic cost of living provisions.

As of July 1978, the premium was raised to $8.20.

Sources:

1) Public Laws cited.

2) Report #94-626. 94th Congress, 1st Session, House of Representatives.

3) Robert J. Meyers, Medicare, McCahan Foundation Book Series, Bryn Mawr, Pennsylvania, 1970.

CHRONOLOGY OF MEDICARE PART B LAWS AND ADMINISTRATIVE REGULATIONS CONCERNING FEES FOR PHYSICIAN SERVICES

1965 - Title XVIII of Social Security Law, Public Law 89-97

Provides coverage for physicians' services to Medicare enrollees. After an initial deductible, Medicare pays 80 per cent of "reasonable charge" for medically necessary covered services. Payment is made to the beneficiary, unless he assigns his right to benefits to a physician who accepts assignment. In determining the reasonable charge, carrier must consider customary charges by the physician for similar services as well as prevailing charges in a locality.

1966

Carriers were given considerable flexibility in their method of implementing reasonable charge policy. By regulations and guidelines, SSA attempts to standardize reasonable charge determination as the lowest of the actual charge, customary charge of a physician for a similar service, and the prevailing charge in a locality for that service.

1967

SSA instructs carriers that a physician's customary is to be his median charge for service. New customary charges may be recognized based on evidence that a physician's charge pattern had changed over a period of time.

1968

SSA informally encourages carriers to delay at least 12 months before changing a customary charge.

SSA directs carriers to base the prevailing charge limit on the 83rd percentile of customaries.

1970 - IL 70-10

Sets various administrative ground rules, including policy for handling unusual circumstances.

1971 - IL 71-7 April 1971

Outlines basic policy in computing reasonable charges. Instructs carriers on calculating reasonable charge screens for FY 1972 based on claims processed or rendered during CY 1970 (thus mandating a 1 1/2 year time lag). The median of the arrayed actual charges is the customary. To the maximum possible extent, information from carriers' other programs, the Federal Employee Health Benefit Program (FEHB), other insurance programs, CHAMPUS, and Title XIX is to be included. If a carrier had permitted an increase in a physician's charge under unusual circumstances (IL 70-10) the increaased charge shall be recognized as the customary if it exceeds the median.

The prevailing charge limit is set at the 75th percentile (of the customaries) instead of the 83rd as previously.

1972 - Social Security Amendments of 1972, Public Law 92-603

Included several regulations to control rising costs of Medicare program.

Section 224 contains two provisions relating to reasonable charge

determination for physician services.

A - Incorporates into law the administrative policy that

a) reasonable charge cannot exceed customary or prevailing

b) customary charges are to be set at beginning of FY based on preceding CY

c) prevailing to be at 75th percentile of weighted customaries

B - In order to restrain carrier recognition of local charge increases that would influence reasonable charge determination, prevailing charges are to be tied to an economic index based on changes in operating expenses of physicians and earning levels. The resulting charges may be below the 75th percentile. The method of calculating the limit on increases possible under this provision is to be determined by the Secretary.

CY 1971 is the base year for the proposed index. Increases in the index for succeeding calendar years would determine the maximum aggregate increase in prevailing charges allowable in the next fiscal year.

April 1975 - IM 75-53

Gives regional offices detailed guidelines and rating techniques concerning reasonable charge procedures of carriers in their jurisdiction.

June 16, 1975 - IL 75-17

Notice of proposed regulations to implement section (the 1972 amendments) was issued by HEW in April 1975. After the House Subcommittee on Health held hearings on June 12, the regulations were issued in final form

on June 16.

IL 75-17 furnishes instructions for calculating prevailing charges for FY 1976 allowable under the economic index. For FY 1976, the index is 1.179 (FY 1973 prevailing charges equals 1) calculated nationally but to be applied locally. The index is applied procedure by procedure, locality by locality, and specialty grouping by specialty grouping. In general, carriers must determine maximum allowable prevailings by service, specialty and locality by multiplying the corresponding 1973 charge by 1.179. Where no directly comparable 1973 prevailing charge screen existed, a substitute to be used as the basis for the 1976 maximum is to be calculated by one of six specified methods.

Dec. 13, 1975 - Public Law 94-182 Section 101

The unanticipated result of the application of the index was to roll back FY 1976 prevailing fee levels below FY 1975 in a significant number of cases. To remedy this, Section 101 of Public Law 94-182 provides that:

a) During FY 1976, despite the application of the economic index, no prevailing fee level for physician service will be below that for FY 1975.

b) If a beneficiary or physician has already been reimbursed in FY 1976 at a prevailing level less than for the same service in 1975, carriers must (within six months) pay an individual what he is due because of the rollback except for differences of under $1.00.

January, 1976 - IL 76-4

Implements PL 94-182. Gives carriers instructions concerning the adjustment of prevailing charge screens for FY 1976 to prevent rollback below FY 1975 levels. Also specifies method for reprocessing underpaid claims that had resulted from application of the index.

July 16, 1976 - Public Law 94-368

a) Assures that application of the economic index will never result in prevailing charges for physician services lower than those of FY 1975. (Even without the law, likelihood of such an eventuality decreases with succeeding years.)

b) Retains July 1 as the start of the Medicare fiscal year despite the Congressional Budget and Impoundment Control Act of 1974, which named October 1 instead of July 1 as beginning of government fiscal year. (Since the October date would extend the time lag between calculation of customary screens and actual charges on which they are based, it was feared that assignment rates would be lowered and beneficiaries would suffer.)

April 1977

Revisions in Medicare Part B Carriers Manual do the following:

require minimum of three charges where two are identical or four different charges to establish a customary

require five customaries to establish a prevailing

require at least seven customaries for other procedures in the category of service in which the given procedure is classified to create a conversion factor for determining a customary fee

References:

94th Congress 1st Session: House of Representatives Report No. 94-626.

94th Congress 2nd Session: House of Representatives Report No. 94-1114.

Laws and memoranda cited above.

CHAPTER 4

LITERATURE REVIEW

The preceding chapters have explored the general economic position of the aged and some of the complex interrelationships between Medicare program outlines and the market for health care, which often make it difficult to use Medicare to meet the needs of the aged population. The present chapter reviews the state of the art of economic analysis of the physician service market, selecting themes that are most relevant to the research. The empirical economic literature on the physician market can be divided according to themes of utilization, physician supply, and effects of reimbursement methods. All these are part of the context of CUNY's study of discretionary practices of carriers.

Utilization

Carrier influence on the general fee levels and on the relative fees of different doctors for different medical services can only be felt within the context of the Medicare market, a part distinct in some ways but not in others - of the general market for physicians' services. The market forces involved in modifying or generating supply of physician services, and the specific impact of third party reimbursement approaches, must be considered in analyzing carrier practices. From a policy point of view, these forces must be well understood to avoid unintended effects such as encouraging too much surgery or unnecessary visits or discouraging supply of needed primary care. The fact that "too much" or "needed" are not always easy to define does not negate the importance of selecting efficient policies, and therefore, understanding the market context in which policies do and will operate. It is also vital to try to isolate effects of specific policies from effects of general market influences. As our service economy has developed, and as medical care became an absorbing public problem, a wealth of literature has been amassed examining the physician service market. A selection of important contributions in the fields of utilization and supply of services of physicians and studies concerning price and related effects under third party schemes and Medicare in particular was made as background to the CUNY study.

The policy implications directly or indirectly concerning Medicare have been considered. A summary table[1/] presents in brief the data base, methods and findings of empirical studies included in this review.

Various studies reveal certain methodological problems in studying the economics of Medicare; and particularly in correctly interpreting statistical results and generalizing from them. These include:

1/ Pp. 4-27--32

1. Low response rate in mailed and interview questionnaire surveys
2. Inadequate specification of variables such as available income, and type of carrier
3. Availability of data at an appropriate level of disaggregation
4. Time period of study: pre-Medicare or early years, different time bases for different variables, and cross-sections capturing different cohorts of individuals
5. Correct interpretation of proxy variables
6. Extension of found relationships to other parts of the range of values of a variable
7. Ignoring of interactions that may damage found relationships in other settings

Specific limitations of studies of physician career decisions have been noted by the Institute of Medicine. In its literature review, the Institute of Medicine study group notes that in some cases only general practitioners of an earlier period were studied, the point in the career selected for study may be too early, or else introduces retrospective rationalization of choices, measures of lifetime income were used that understated future returns, vacancy/searcher ratios and other market information may have been ignored, and a variety of testing instruments have been used to study personality factors in choice. In analysis of location choices, geographic units too have been non-comparable or the wrong size, different definitions of prior residence are used, and variables may be intercorrelated.

Various studies of utilization of physician services have examined the effects of demographic and income factors, health status, and price of care on use of service. Supply characteristics such as solo vs. group practice and access to service as measured by time expended in obtaining care, delays to appointment, availability on weekends, etc. have also been considered. The research has shown that many factors influence utilization.

Utilization itself has been measured as percent of a group using any services, and levels of service (as shown by expense per user or services per visit), described respectively as "contact" and "volume" variables. These theoretically refer to different decision paths, since it is assumed that entry into the system is more volitional for the individual whereas adding-on of services is more controlled by the practitioner. While this partition suggests that personal factors have more influence on the former and supply factors on the latter, it would seem that interactions could occur. For entry may be affected by the patient's expectation of availability and by actual difficulty in making contact with a doctor. And although the doctor may order additional services, all patients may not be equally compliant, since the services may entail risk, time, residual direct cost, and discomfort.

Among the models of utilization that have attempted to identify the roles of different factors in relation to patient decisions, the Andersen model notes those that predispose, enable, or propel (need). The separation is somewhat artificial inasmuch as demographic factors, placed in the predisposing group, are expected to affect use because of their relation to health. Hence the path of influence for demographic factors overlaps with that for need.

In fact, the interpretation of demographic factors is one of the major problems of utilization research, because the reason why a factor is producing

a certain effect influences the outcome expected from a policy that would change access for a given age, race, residential or other group. Age is connected with health, economic status, infirmity and mobility, birth cohort membership, and other factors. Aged persons should be propelled by need based on lower health status, but held back by inability to meet copayments and travel costs out of income and by difficulty in travel. However if sufficiently infirm they are largely removed to the institutional population, truncating the distribution of probabilities of different individuals seeking ambulatory care. Birth cohort affects not only health probabilities of aging per se, but also nutritional and environmental health "endowment" peculiar to a given historical era, and attitudes about the body, mind, and health care system. Age as a proxy is overly burdened with these cross-acting effects and needs to be disaggregated in relation to income, health status, living arrangements and attitudes. In studies of Medicare enrollees, a general age group is, of course, established in advance. Narrower groups (e.g., 75 years and over) do differ in utilization, although the patterns change over time (e.g., as surgical technology opens the door to safe interventions at later ages).

Education is a variable that has done duty as a measure of a) recognition of the value of professional and, in particular, preventive health services, b) capacity to keep good health by household activities such as hygiene and nutrition practices and exercise, and c) capability of substitution of self-ministrations for professional services in minor illness and chronic disease maintenance. It is sometimes used to stand for economic level, too. This is not entirely redundant when income data are directly available, since the latter may not accurately indi-

cate "permanent" income. Overall, however, an explanation of utilization by education itself calls for an explanation. The same is true of age. It may also be true of income insofar as it stands for mode of living, access to escort and child care services, etc.

Models of patient decisions[1/] that draw on the psychological processing of perceived life events in relation to health implications, immediate disutilities, alternative strategies and costs, etc., are of interest but have not been formally integrated with statistical studies. The latter use widely available socioeconomic variables, in conjunction with simple organizational variables, a small family of health status indicators based on interview (self-evaluation and reported disability experience) or clinical records, and access indicators oriented mainly to time used or elapsed.

From the policy viewpoint, findings on the determination of utilization are filtered through the concept of equity, a concept which has very wide appeal owing to the many social functions performed by the health care system (curing, caring, habilitation, and other functions). If public programs are not effective in attaining equity, it is important to ascertain what types of changes are needed. Equity is defined in relation to need. This is not entirely helpful because measures of need have deficiencies. Existing measures have understated and failed to specify the element of preventive services in population at different levels of wellness. Subjective factors that affect self-evaluation, decisions to withdraw from usual activity, and decisions to seek care are present in need measurement. Sex biases or differences in interpretation of usual roles and in illness behavior also affect measurement of equity

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1/ Horacio Fabrega, "Toward a Model of Illness Behavior", Medical Care, Vol. II, No. 6, Nov. - Dec. 1975, 256-284.

of access. However, equity is a useful and necessary concept. Measurement of the extent of its attainment has been improved.

Review of Utilization Literature

Analysis of expenditure trends over two decades in which public programs were initiated and private insurance expanded shows an accelerating rate of increase in expenditure with a relative decline in out-of-pocket payments. A substantial portion of the service received by the poor is paid for directly and the percent of income used in direct payment for care, after adjustment for family size, is higher at low income levels. Persistent access problems appear to be associated with under-average expenditures for certain groups. Use of free care also varies.

A substantial review of literature on utilization under current financing arrangements was conducted by Donabedian and covers publications appearing up to mid-1974. Donabedian's analysis of how insurance affects utilization is based on separation of effects on the patient (price, income, complementary effect) from effects on the doctor (revenue effect). The direct price effect (elasticity) leads to higher volume but the indirect effects may constrain access for certain groups.

Participatory payments inhibit utilization. The specific impact of deductibles and coinsurance, alone and in combination. is shown to be different for different income groups and sensitive to other circumstances of the patient. Cost-sharing may affect number of services or payment levels, but the latter measure may reflect different mixes or quality of service. To examine the response to copayment at different income levels, the factor of health status has been controlled for in Davis and Reynolds' study of Medicare. The effect of income may be indirect in that purchase of supplementary insurance

is easier at higher incomes and this cushions the impact of copayment on demand. Reallocation of resources away from preventive care is an important outcome of copayment.

In a critique of Davis and Reynolds' work, Dorothy P. Rice points out that income differences in the rate of use of physicians among the elderly are not necessarily the result of cost-sharing. She also notes that the number of SMI services per user does not differ by income after family size is taken into account.

Free care has been shown to increase use of care by low income groups and these effects have been dramatic. However, willingness of physicians to treat patients with certain characteristics, time costs of receiving service, and other factors affecting access have been noted as allocative influences and their importance for the distribution of the aggregate of services rendered among various groups has been thrown into relief by the removal or reduction of financial barriers. Physicians' willingness to supply additional hours or take all comers may be a critical element.

The influence of geography on equity of utilization is a matter of concern for health care policy. Physician supply and other factors affecting access to health care vary across localities. Measures of access are being used to allocate funds. To implement the principle in the HMO Act of 1973 under which areas designated as medically underserved were supposed to receive funding priority, a method of expert consensus was used by a Wisconsin group to arrive at a single index number combining several variables. The infant mortality rate, the physician/population ratio, the percent of population 65 and over, and the percent of population below the poverty level were the factors used. While it should be agreed that an underserved area will have lower than average utilization rates and low health status, this was not

initially validated. Kleinman and Wilson[1/] analyzed Health Interview Survey (HIS) utilization and health status data for residents of medically underserved areas (MUAs) and non-MUAs and reported minimal differences in number of physician visits and percent with one visit or more, but some difference in the mix of GP and specialist care. (However, the contrast is minimal compared with the SMSA-non-SMSA difference.) Perceived waiting and travel time was not different (although actual time consumed was greater in MUAs) and residents of MUAs were equally well satisfied with care). Use of preventive services was less and use of hospitals was substantially higher, although the rate of surgery was similar. Health as shown by subjective reporting and by disability days was somewhat worse. The intensified hospital use could be explained by this but also by worsening of health because of restricted access to ambulatory care. It is not clear that the MUA as its factors are now weighted is a good predictor of access problems.

Reimbursement method is one of a number of variables used by Holahan in examining utilization by persons living in poverty. Holahan's work examined the percent of eligibles seeing a doctor and expenditure level per recipient of service as the two facets of physician utilization under Medicaid. He distinguished office from hospital outpatient care and thus was able to study both substitution and differential effects of important variables in the two settings. The effect of more restrictive methods of reimbursement on utilization was tested, the pathway being the doctor's willingness to participate and to provide more services. The method of reimbursement was defined as payment up to the Medicare limit (75th percentile) vs. fee schedule. He found that reimbursement method did affect the expenditure variable but not the user

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1/ Joel C. Kleinman and Ronald Wilson, "Are Medically Underserved Areas Medically Underserved?", Health Services Research, Summer 1977, pp. 147-162.

variable. If quality is unaffected, this could mean savings to Medicaid. Other variables also make a difference in utilization. Among these is income. Physician availability appears to be important under certain conditions. There are also, evidently, substitution effects. The extent of addition of discretionary services as income increases would explain different elasticities for different user groups (disabled, AFDC children, and AFDC adults.)

Effects of fee vs capitation payment methods are indicated in a study by Scitovsky and Snyder. 1/ They look at two retirement centers in Palo Alto, California, one (A) having a fee-for-service arrangement with the Palo Alto Medical Clinic and the other (B) a capitation system. Both of these groups, living under conditions of "free and easy" access, use many more physician ambulatory services than the level shown in other studies of old people. Use of physician services was somewhat higher under capitation (19.2 services per person per year compared with 16.3). Age and sex may have made some difference in use rates; in addition, middle-class backgrounds may have accustomed the individuals to ready care. It is also suggested that demand is often for social attention rather than specific technical services.

Absent in the literature are studies directly relating carrier practices to utilization. The HIBAC study by Huang and Koropecky which employed carrier practices as an independent variable was addressed to the determinants of physician fees rather than utilization. The study by Huang and Koropecky on utilization was confined to the effects of cost-sharing.

1/ Anne A. Scitovsky and Nelda M. Snyder, Medical Care Use by a Group of Fully Insured Aged, A Case Study, DHEW Pub. No. (HRA) 75-3129.

Physician Supply

Physician supply is an intervening variable, or set of variables, in assessing the effect of discretionary practices on fee structure. Moreover, the response of doctors to the fee structure is critical in deciding how such practices could be modified to the advantage of Medicare and its beneficiaries.

It has already been noted that the supply response of physicians to changed demand under private insurance and public programs is a major consideration in relation to equitable access to health services. The descriptive and analytic study of the supply of physician services has become a leading subject in health economics because of its implications for planning. Current emphasis on planning at the local level involves even more attention to supply, since local availability is essential for a personal service, particularly one in which lapse of time may be important for outcome.

The supply of physician services is distinguished from that of physician manpower because the productivity of physicians is not fixed. It is affected by hours worked, cooperating factors of production (office aides and equipment, hospital services), and mastery of state-of-the-art technology. The aggregate supply of physician services is distinguished from that available for different uses because of specialty and location choices, and non-patient care careers.

A baseline study of physician net income in the pre-Medicare period by Dyckman provides a view of the market equilibrium before extensive public programs. Income varied by specialty and was higher for board-certified specialists than non-board specialists.

Income also varied by practice form (partnership higher than solo, and salaried physicians lowest). However, this may reflect specialty differences as well as returns to an efficient form of organization or a more salable service output.

Income varied by geography. There were regional differences, and SMSA earnings were higher. Again, specialty mix may be responsible for some of this difference. Large SMSAs did not have as high earnings as small SMSAs, probably reflecting competition based on the other desirable features of metropolitan practice. Locality designation under SMI could affect these differences.

Income also varied by age: a) the peak was 45-54, b) the specialist-GP differential increased with age, c) the dispersion of income was greatest at both ends of the age distribution, and d) pathologists evidently compensated for shorter hours as age increased by the inputs of others. Hours worked enter into age differences.

The pre-Medicare physician income pattern was consistent with a certain distribution of supply across specialties and localities. It did not offer rewards for primary care, rural practice, or practice in inner cities. It appeared to contain proportional rewards for extra hours of work.

While factors other than income enter into practice and supply decisions, earnings clearly must not be overlooked. The income pattern

attained under Medicare should be consistent with the supply distribution that is desired today for reasons of equity, quality, prevention, and other social purposes. Discretionary practices should be analyzed in relation to their effect on income of physicians.

Arasteh has reviewed literature on geographic location choices of physicians, in relation to national goals of correcting maldistribution. Despite difficulties in arriving at an acceptable concept of need and carrying out measurements, uneven distribution in relation to available gross measures of need is shown by statistics. Economic factors are intermingled with non-economic factors. Opportunities for professional advancement have their content of role satisfaction as well as earnings. Prior experience in a locality reduces the risk of choice or the cost of additional search. Potential demand is shown by several indicators to affect location choice.

The model of physician specialty and location decisions advanced by Hadley examines a very wide range of variables that cover financial factors, medical school and internship hospital characteristics, personal background and exposure to given geographical areas. Hadley sets his analysis in the framework of a general choice theory in which specialty decisions are made before location decisions. His study is unusual in the number of variables systematically reviewed, although some are weak measures of a concept (infant mortality for effective demand?) and some poor results are obtained. Also, his representation of certain effects by available proxies is not ideal. The use of the state as the unit of observation for location choices was dictated by the nature of the data but is clearly not fine enough for important distinctions between metropolitan and other areas and between large and small

SMSAs.

Another feature of his analysis is the policy orientation and the policy inferences drawn from the study. Personal characteristics of the physician (age, ability, and locality and specialty preferences) and characteristics of the students at a medical school (a proxy for admission policies) significantly affect specialty choices, although other factors have some influence. Location choices are influenced by demand as measured by proportion of physicians working over 49 weeks per year, by place of birth and of residence before medical school; and by state of medical training. The specialist/population ratio in a state, and population migration, influence physicians having no previous contact with a state, or only graduate training there. Relative income has no significant effect on location or on specialty, but errors of specification and errors in the variable may account for this. In addition, if the incomes of physicians in all areas and specialties are above an acceptable minimum, non-monetary considerations would have more power to affect choice. That is, the relationship of choice to earnings is being observed over part of the full range of incomes, as a result of a market that is generally favorable to physician earnings, and the student group is drawn from high-income families. The policy implication is unfavorable to subsidizing medical training of physicians who were previously residents of a state, but does support subsidies to non-residents trained outside. However, if fee levels were substantially changed, these relationships would have to be retested.

Other policy implications concern analysis of medical student preferences and school admission policies that would support socially desired specialty preferences. So far as demographic characteristics affect preferences, selection for medical training based on demographic characteristics would affect specialty distribution of graduates. However, these associa-

tions can change with a different structure of opportunities.

The findings from the SOSSUS study on performance in in-hospital surgery as reported by Nickerson et al. in the New England Journal of Medicine concern the possibility of too many doctors in a field and the optimal sharing of GPs and specialists in the performance of a given procedure. Both are of interest for Medicare costs. For specialists, workload varies by specialty, "professional age" (years since graduation), board certification, and practice organization. GPs perform a substantial portion of several common procedures but only one of these (inguinal hernia repair) is significant for the aged. Specialists typically have low frequencies for most of the over 600 procedures they are reported as providing. A median occurrence of once a month is attained by only 16 of 36 most common operations. Fully 12% of all Medicare reasonable charges for surgery may be accounted for by lens extraction, generally performed by ophthalmologists.

Analysis of programs to improve distribution of primary care, by Lewis, Fein, and Mechanic, provides a rough but very pertinent empirical test of research hypotheses about supply. Loan forgiveness is a weak economic incentive, since revenue opportunities make repayment easy. Exposure to rural practice does not necessarily improve liking for it. Role socialization as family practitioners may have promise given an acceptable reimbursement structure. A general increase in the number of physicians holds out no special hope for access to primary care, but physician substitutes have a potential to do this if conditions of employment and use are favorable. In short, these various programmatic efforts have not solved as yet the problem of a permanent structure of incentives that will achieve an optimal supply of primary care sources without windfall gains. Fee levels remain an

important incentive; Wilensky singles out the importance of relating local fee differences to costs of providing services to avoid financial inequities such as higher copayments for those without supplemental insurance.

Reimbursement

Price, one of the important concepts in interpreting Medicare data and the effects of reimbursement practices, is actually a set of concepts; each embodies a different perception on the part of Medicare, the physician, and the patient.

For Medicare administration the reasonable charge has a definite meaning because 80% of it is the program liability for a covered service rendered by a physician to an enrollee. The prevailing charge is an upper bound of market prices, unlike submitted and customary charges in that it is imposed by the program. But the prevailing charge is not a good indicator of prices for comparing geographic areas because its relation to the median and mean can vary.

The weighting of prevailing charge distributions by frequencies introduces another issue. The weighted charges are a better indicator of current cost to the program under a given set of rules than the unweighted charges. (They are also a better upper bound of copayment obligation under assignment, discussed further below.) The unweighted charge patterns are a set of signals to physicians that can influence supply decisions for future production periods (entry into a specialty, geographic location, choice of procedures, and - closely related to procedure choices - mix of patients by age.)

For physicians, the submitted charge is chosen by the physician and may vary in consideration of the circumstances of the service and the patient's ability to pay. The revenue to be expected from a given submitted charge depends on whether physicians elect assignment, waive the 20% copayment, and decide not to bill for the deductible.

The patient, who needs to decide how to allocate a limited income, is obliged to think of out-of-pocket payment as a price. Living under Medicare, patients would learn that this varies with assignment decisions, and that submitted charges differ between specialists and GPs and between individual physicians as well.

For the measurement of price changes over time, the unit of service provides another source of inconsistency. The content of an office visit or the surgical approach or other technical detail of a given procedure may be altered. Since an episode of care may involve a different bundle of inputs, the movement of its cost cannot be inferred from the movement of actual charges for individual visits or other specific services.

There are many possible variations in services per visit depending on patient condition and physician habits (scheduling return visits, discouraging use of the telephone, substitution of hospital services for physician inputs). Specialists may use a high first-visit fee to discourage simple cases for which revenue would be low, thus adjusting case mix and standardizing services per visit.

To study services per episode, one approach is to examine inputs under standard technology for common medical conditions. This was done by Scitovsky and McCall using 1971 data at the Palo Alto Medical Clinic to compare with 1964 estimates. Two conditions of children, two of women, and four general conditions were studied. Tracking hospital, drug, X-ray and physician inputs,

they found changes in treatment methods such as less use of radical mastectomy for cancer, less use of general anesthesia for delivery, and more costly drugs for otitis media. While there was no trend in the number of physician visits per diagnosis, there was a shift to less expensive (and less intensive) office visits. GP and internists' fees rose at different rates, and in turn differed from the fee trend for pediatricians.

A given reimbursement rule or practice generates several different "prices", each motivating a certain type of actor to adjust future responses - the physician to change volume and mix of services, assignment rate, specialization goals, locality of practice, and future submitted charges, the patient to change amount and source of care, and Medicare to seek changed terms of the pricing process.

The early perception that insurance adds to effective demand and can raise prices was a recognition that insurance modifies behavior on the market. Later analysis has examined the supply response of physicians to an insurance environment and the effect of specific reimbursement practices on the market for health care.

Huang and Koropecky[1/] have shown that fee schedules and relative value scales used as alternatives to the reasonable charge process under Medicare tended to check the rate of fee inflation and that less frequent updating has a similar effect. A profit-maximizing response of physicians to market opportunities was assumed. Their analysis was confined to carriers whose territories were coterminous with a state.

Frank Sloan, together with Bruce Steinwald, has studied physician fee determination under conditions of insurance using a model of profit maximizing

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1/ Health Insurance Benefits Advisory Council (HIBAC) study.

that incorporates third party reimbursement features in the demand factors to which physicians respond. The 1974 paper by Steinwald and Sloan studies four prototype fees and 5 specialties. Within insurance-related variables major medical was distinguished from basic coverage, and UCR practices, commercial/Blue Shield benefit ratio, and the most prevalent Blue Shield fee schedule were considered. Practice variables and patient and community characteristics were included. This work has methodological problems such as the low response rate in the AMA data used for practice costs and other physician variables, an incomplete specification of patient behavior because waiting time is not considered, and a shifting geographic base for insurance variables. However, insurance was found to affect price-setting. The percent of the variance in fees explained by the model ranged from 13 to 41 percent for different specialties and services.

The insurance concepts used by these authors were developed and refined in a 1975 paper that distinguishes average from marginal coinsurance rate and specifies the behavior of the marginal rate under basic and major medical insurance. That is, the conditions behind patient behavior and profit opportunities for physicians are better understood. Frequency distributions of fee schedules and of copayment rates replace the simpler and cruder concept of a most prevalent fee schedule. Sloan and Steinwald note that different specialties differ in their dependence on insurance, and further, that under major medical, as amount paid is based on all bills in a time period, not on a fee per procedure, the incentive for 'taxonomic inflation' is less. Low marginal coinsurance rates should tend to raise fees. Participation in Blue Shield (analogous to accepting assignment under Medicare) is examined within the profit-maximizing model. The focus is on adding the right number of patients for whom the doctor is only a 'price taker' so that the net revenue is maximized (marginal revenue equal to marginal cost).

Since having more patients is related to working more hours, this discussion is connected with the general problem of incentives. Sloan is interested in physician behavior under conditions of group practice,[1/] now absorbing (according to AMA Profile 1975-76) about 25% of practicing physicians. The critical assumption is that a disincentive to additional effort is associated with increased size of group (p.62). The model for physician behavior includes the effects of income distribution arrangements (whether proportional to effort), of capitation vs. fee basis of patient payment, and of single vs. multi-specialty groups, on physician behavior and effort.

The link between the incentive issue and reimbursement practices is that the willingness of doctors to supply services at limited fees under third party programs may vary by practice form because of the dynamics of determination of net return to individual effort. The supply response is in turn critical for access to care by eligibles.

The fee patterns for 39 frequently performed procedures under Medicare were examined by Schieber et al. using BHI survey data from 47 carriers. Fiscal year 1975 prevailing charges, based on calendar year 1973 billings, were examined to determine general practitioner/specialist differences and inter-locality variation. The range from lowest to highest fee across areas, measured in multiples of the lowest, was 3 to 8 times the lowest for different medical procedures, 3-17 times for different surgical procedures, 3-18 for laboratory, and 4-8 for X-ray. However, there was relatively little dispersion around means as measured by coefficients of variation. GP/specialist differences were common but for a number of laboratory procedures it was the GP whose fees were higher.

1/ Frank A. Sloan, "Effects of Incentives on Physician Performance", in John Rafferty, ed., Health Manpower and Productivity, Lexington: D.C. Heath, Inc., pp. 53-84.

One problem in interpreting this study is that the prevailing charge (75th percentile) stands in a different relationship to the median (50th percentile) in different specialties and localities. Furthermore, since specialist criteria are defined by each carrier, the quality signified by a specialist performing a given procedure is not standardized. The study provides an indicator of the effect of carrier practices interacting with local market characteristics: the fact that fees are concentrated around the mean may imply that the effect of variations in carrier parameters for excluding token and extreme charges and for forming prevailings is subordinated to other factors.

Sobaski analyzes the effect of a change in the coded nomenclature of procedures. He calls this the pattern of terms; others have referred to it as taxonomic inflation. Use of California Blue Shield data for Medicare in 1970 and 1972 permits study of the effect of changing from the 1964 to 1969 CRVS. This involved moving from 2000 to 3600 listed items. A profit-maximizing action is hypothesized, covering both performing a different service and enhancing the description of the same service. For office visits, the average actual charge rose 15.7%, of which 4.9% was due to the pattern of terms. Similar results were obtained for hospital visits.

A companion study conducted in Palo Alto by Scitovsky and McCall did not confirm this effect.[1/] However, their other study of episode costs referred to on p.24 shows a shift to less expensive visits for acute illness. In addition, the input of pediatricians in an office visit may have been altered by the change in the birth rate, affecting the mix of "new"and "old", sick and well babies. While Scitovsky and McCall believe that the reason why Palo

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1/ The 1969 California Relative Value Studies and Costs of Physician Office Visits: Two studies by William J. Sobaski and Anne A. Scitovsky and Nelda McCall, Health Policy Program Discussion Paper April 1976, School of Medicine, University of California (San Francisco).

Alto Medical Clinic doctors are not affected by coding terminology is that they assume they will be paid in full, a full model of physician behavior under PAMC payment conditions is not attempted. Are physicians a 'neutral filter' for technology, made into a patient advocate by competition - or they have enough market power to adjust product description and actual performance to what the market will bear? Under what conditions is each role more likely?

Results similar to Sobaski's were obtained in Minnesota in an examination of the effect of a shift to the Minnesota Relative Value Index from the earlier system based on the 1964 CRVS. However, the sample was small. The direction of the findings was that an escalatory effect on charges occurred. The most notable effect was for surgery, which is puzzling because this group has the least fragmented codes under the new system. One factor that must be accounted for in comparisons of experimental and control groups is that "adopters" of the MRVI may be leaders in raising prices even without changing codes. However, a new code certainly provides an opportunity.

A Virginia study also shows effects of a change in procedure codes, in this case to the AMA's Current Procedural Teminology (CPT): fees in medicine were raised but not fees for most other types of service. These results do not preclude 'taxonomic inflation' within types of service; also shifts between types of service could keep outlay per patient constant, thus masking the effect of 'taxonomic inflation'.

Gabel et al. consider the capacity of Medicare to restrain inflation under CRP reimbursement as a major policy question. Examining survey data for 1975, they find that fees are lower in areas where doctors are scarce - and where incomes are lower. Metropolitan area practice costs do not correlate with fees. Reasonable charges have been growing less rapidly for GPs than for specialists. Access problems are deduced from these findings and from Medicaid's fee level being below Medicare's. It is suggested by a Mathematica study that visit frequency is increased by doctors to offset lower fees. They are increasing their hours of effort to bring their incomes up, but this is at the

expense of the patient in terms of residual direct cost, possible risks of care and waiting time.

Effective fee control is only one measure of carrier performance, for 1) slow claims processing may affect assignment rates, 2) the fee structure may discriminate against certain specialties or against types of beneficiaries who need a particular mix of services, and 3) administrative costs may be high, reducing the net saving to Medicare. If assignment rates are reduced by fee control, access is believed to be impaired and financial burden on patients is increased - for two reasons: the charge is higher and there is no third party support for the excess over reasonable charge.

Another HIBAC study inquired into how Medicare provisions affect assignment by means of a physician questionnaire. Although the response rate was less than desired, certain valuable findings emerged. 1) Specialty differences in assignment rate vary between states. 2) Some doctors make case-by-case decisions and others never accept assignment. 3) Doctors in specialties with repeated contact with older patients are more willing. 4) Ability to pay is considered heavily. In the assignment decision, doctors appear to consider rapidity of payment for assigned claims a partial offset at least for lost revenue opportunity. Finally, some doctors bill for coinsurance and others do not.

The best methods of making carrier behavior uniform across areas of the nation are of interest to HCFA. Legislative requirements and regulations are theoretically most controlling, but only if enforcement is adequate and only if the carrier does not substitute other practices leading to inflation (in response to physician initiatives), such as reclassification of physicians as specialists and redefinition of procedures so that higher prevailings are formed. Selection of carriers is another possible control method but consensus is absent on

characteristics likely to predict effective control. (See p. 3-4.)

DHEW has shown interest in policies that will require physicians to accept assignment, and that will foreclose opportunities to modify the pattern of terms. The Forward Plan for Health [1/] in 1976 proposed offering an option to physicians to become full or associate participating physicians. Under the first, the doctor accepts assignment and is paid 100% of reasonable charges, while the carrier bills the beneficiary for the copayment. Under the second, the doctor decides on assignment case by case but is paid only the insured portion of the reasonable charge. It is stated that 90% of physicians refuse assignment some of the time and the majority do so most of the time, with about half of Part B claims being assigned.[2/] Another option that is proposed would supply beneficiaries with the names of participating doctors in their locality.

Traditional pricing models may have to be modified so that alternative available to maximize physician revenue, reduce uncertainty, and attain psychologically acceptable conditions of practice in different market situations are shown more explicitly. The joint decisions that are made by physician entrepreneurs in the environment of Medicare and Medicaid have not been sufficiently studied.

1/ U.S. Department of Health, Education, and Welfare, Public Health Service, Forward Plan for Health FY 1978-82, August 1976.

2/ For CUNY findings on this, see Chapter 12.

Table 4-1

Summary of Empirical Studies

Authors	Data Base	Method
1 Donabedian	Various populations in US & Canada.	Review of set of studies of effect of insurance, copayment and free care on utilization.
2 Davis & Reynolds	Medicaid, Medicare & HIS data.	Econometric study of utilization by different population groups under Medicare and Medicaid, with consideration of health status.
3 Andersen, Kravits & Anderson	3,880 families, containing 11,822 persons.	Interview, response rate 82%. Cross-sectional and trend analyses of utilization of hospital, physician and dentist care.
4 Holahan	Medicaid & other state statistics.	Econometric analysis of utilization of office and clinic services - disabled, AFDC adults, AFDC children.
5 Dyckman	IRS data on 22,000 MDs from AMA directory, in 10 specialties.	Statistical analysis of specialty, geographical, sex, country of origin & other differences in earnings and in practice characteristics.
6 Hadley	Numerous - AAMC, AMA, etc.	Econometric model of specialty and location choice within general choice framework.
7 Nickerson et al.	SOSSUS data on 4 study areas.	Statistical analysis of surgical workload of practitioners at different levels of specialization.
8 Scitovsky & McCall	Palo Alto Medical Clinic records.	Data obtained from PAMC and patients. Analysis of cost of certain illnesses.
9 Steinwald & Sloan	1971 Periodic Survey of Physicians (AMA) & other sources.	Econometric analysis using physician, patient and insurance-related factors as independent variables.
10 Sloan & Steinwald	AMA & other.	Various statistical analyses and review of data from other sources.

Table 4-1 (continued)

Summary of Empirical Studies

Objectives
1 Identify separate mechanisms such as direct and indirect price effect on patients, physician response to insurance-powered demand, non-price rationing.
2 Assess attainment of social objective of equity.
3 Measurement of extent to which equity is achieved. If illness-related factors dominate rather than income, residence, race, equity is greater.
4 Measure effect of availability, income and patient characteristics, etc. on percent users and expenditures.
5 Pre-Medicare baseline description of reward structure in US Medicare.
6 Comprehensive canvass of a variety of explanatory variables, many with policy implications for medical education.
7 Assess supply in relation to need.
8 Measure effect of technological change on prices, correct bias in CPI non-recognition of quality change.
9 Measure effect of insurance on fees within model of medical market.
10 Improve specification of physician fee behavior under insurance.

Table 4-1 (continued)

Summary of Empirical Studies

	Findings
1	Income elasticity of demand under insurance is estimated and many interactive relationships affecting demand and utilization are noted, such as effect of deductible and coinsurance considered jointly.
2	Improvement in utilization by poor on welfare and aged, but various differences in utilization not explained by differences in need have remained.
3	Numerous findings. Insurance status affects demand for physician services. Equity generally is less for entry than for volume of services.
4	Availability, income, race, etc. have effects; elasticities seem to reflect discretionary spending. Some substitution effects. Different results for different Medicaid categories.
5	Variation by specialty, locality; age/earnings profile different for GPs and specialties.
6	Previous contact with a state had impact. Income of restricted importance. Specialty choice precedes and conditions location choice.
7	GPs contribute little to many procedures but do take up significant share of certain procedures for younger age groups. Evidence of excess supply of surgical manpower.
8	Shifts in episode costs mostly down, but physician fees tended up; variation by condition and specialty.
9	While null hypothesis about insurance variables in combination is rejected, results are mixed and model leaves questions. Wages of aides are significant. Patients' income effective but with low elasticity.
10	Marginal coinsurance rates vary by type of procedure. Insurance affects prices of office and hospital visits.

Table 4-1 (continued)

Summary of Empirical Studies

Authors	Data Base	Methods
11 Huang & Koropecky	1969 Current Medicare Survey (CMS) and Demographic Record (DR) and other sources.	Econometric analysis of special data created by merging CMS, DR and Reasonable Charge Tabulation with data on assignment rates.
12 Research Triangle Institute	Interview survey of physicians.	Statistical analysis of four specialty groups in 6 selected areas, based on AMA master file.
13 Schieber et al.	BHI data on prevailings for 39 procedures under Medicare June 1974 (IL 74-19)	Statistical measurement of inter-locality prevailings of GP and specialists.
14 Sobaski	1st quarter 1970 and 1972 California Blue Shield data for Medicare.	Comparison of average actual charges for standard types of services using CRVS 1964 and 1969.
15 Minnesota BC/BS Information Engineering Inc.	37 physician providers.	Telephone survey.
16 Gabel	Medicare carriers and state Medicaid agencies.	Survey comparing local fees to national average medical price index.
17 Barnett	Prevailing charge data for 44 selected procedures.	Comparison of prevailings under GHI and "Shield" NYC controlling for economic index.

Table 4-1 (continued)

Summary of Empirical Studies

Objectives

11 Analyze the effects of the vector of stationary administrative and financial conditions identified with the Medicare method of reimbursement and socio-economic variables on physician fees, and the interrelationship of these conditions with rates of assignment and reduction of claims.

12 Ascertain factors considered by physicians in deciding whether to accept assignment, and billing practices to cope with coinsurance and deductibles; compare areas and specialties.

13 Description of levels and dispersion.

14 Analyze effect of changed code terminology.

15 Effect of changed code terminology on fees.

16 Geographic and specialty comparison.

17 Determines effect of carrier practices on allowed charges.

Table 4-1 (continued)

Summary of Empirical Studies

	Findings
11	Medicare method of payment affects the rate of increase in physician fees. Together with some demographic variables such as age and income, specific discretionary policies also influence physician fee growth, the assignment rate and claim reduction rate.
12	Wide variation in percent accepting assignment and in whether case-by-case decision was made. (Ability to pay was the most important patient factor considered.) Personal relationship was also considered.
13	GP/Specialist differences in 27 procedures, 8 with GP higher. Concentration around means.
14	Change in pattern of terms contributed substantially to price increases.
15	A 10% increase from "fragmentation" effect.
16	Population density and income affect fees. GP charges grow more slowly than specialties.
17	Significant differences in prevailing charges - "Shield" is higher. This is not the result of the economic index or merged data.

Table 4-1 (continued)

Key to Empirical Studies Summarized

1. Donabedian, Avedis, Benefits in Medical Care Programs, Harvard University Press, Cambridge, Mass., 1976.

2. David, Karen and Reynolds, Roger, "The Impact of Medicare and Medicaid on Access to Medical Care." In The Role of Health Insurance in the Health Services Sector, Richard Rosett (editor). New York: National Bureau Economic Research, 1976.

3. Anderson, R., Kravits, J., and Anderson, O.W., editors, Equity in Health Services: Empirical Analyses in Social Policy, Ballinger, Cambridge, Mass. 1975.

4. Holahan, John, "Physician Availability, Medical Care Reimbursement, and Delivery of Physician Services: Some Evidence from the Medicaid Program", Journal of Human Resources, X,3, 378-401.

5. Dyckman, Zachary, Study of Physicians' Income in the Pre-Medicare Period 1965, HEW Pub. (SSA) 76-11932, 1976.

6. Hadley, Jack, Models of Physicians Specialty and Location Decisions, National Center for Health Services Research, Intramural Research Section Technical Paper, Series No. 6 (1976).

7. Nickerson, Rita J., Colton, Theodore, Peterson, Osler L., Bloom, Bernard S., and Hauck, Walter W., Jr., "Doctors Who Perform Operations: A Study on In-Hospital Surgery in Four Diverse Geographic Areas" (Two Parts), New England Journal of Medicine, October 21, 1976 and October 28, 1976, Vol. 295 Nos. 17 & 18.

8. Scitovsky, Anne A., and McCall, Nelda, "Changes in the Costs of Treatment of Selected Illnesses 1951-1964-1971", Health Policy Program, School of Medicine, University of California (San Francisco) September 1975.

9. Steinwald, Bruce and Sloan, Frank A., "Determinants of Physicians' Fees," Journal of Business, Vol. 47, No. 4, October 1974, pp. 493-51.

10. Sloan, Frank A., and Steinwald, Bruce, "The Role of Health Insurance in the Physicians' Services Market," Inquiry, Vol. XII, December 1975, pp. 275-99.

11. Huang, Lien-fu and Koropecky, Orest, The Effects of the Medicare Method of Reimbursement on Physicians' Fees and on Beneficiaries Utilization, Volume II Part 1 of Health Insurance Benefits Advisory Council Report. Robert R. Nathan Associates, July, 1973.

12. A Report on the Results of the Study of Methods of Reimbursement for Physicians' Services Under Medicare; Factors Physicians Take into Account, HIBAC Report, July 1973; Appendix C "The Research Triangle Institute Report", August 1972.

13. Schieber, George J., Ph.D., Burney, Ira L., B.A., Colden, Judith B., B.A. and Knaus, William A., MD, "Physician Fee Patterns Under Medicare: A Descriptive Analysis," New England Journal of Medicine , May 19, 1976, pp. 1089-1093.

Table 4-1 (continued)

Key to Empirical Studies Summarized (continued)

14. Sobaski, William J., Scitovsky, Anne A., and McCall, Nelda, "The 1969 California Relative Value Studies and Costs of Physician Office Visits: Two Studies", Health Policy Program Discussion Paper, April 1976, School of Medicine, University of California, San Francisco, California.

15. A comparison of the Minnesota Relative Value Index and the Blue Shield Relative Value Index as Pertaining to the Medicare Part B Program.

16. Gabel, John, Blaxall, Martha O., Burney, Ira, Schieber, George, "Paying the Physician: Some Lessons From the Medicare-Medicaid Experience". Paper presented to the American Public Health Association Annual Meeting, Miami Beach, October 1, 1976.

17. Barnett, James, Staff Analyses: Differences in Prevailing Charges Levels Between Blue Cross/Blue Shield of Greater New York and Group Health Incorporated.

Institute of Medicine (IOM) Study

The Institute of Medicine study of the effect of third party payment levels on physician choice of specialty and location is reported in chapter 10 of the IOM report to Congress. The study is reviewed in some detail here because of its direct relation - both as to subject matter and as to method - to the CUNY study. This review is divided into two parts - a description and summary, and a critique of the central statistical analysis.

Description

Information collected by DHEW from Medicare carriers showing prevailing charges in FY 1975 for 39 procedures in 292 reasonable charge localities was used in the study. Similar data on 38 procedures under Medicaid were obtained from state Medicaid agencies; 29 of the 38 were found among the 39 Medicare procedures. Prevailing charges for 18 surgical procedures based on 22 commercial insurers were obtained from the Health Insurance Association of America (HIAA); nine of the 18 were also in Medicare and Medicaid. Other sources included SSA's 5% sample of Medicare claims for 1968-72, showing frequencies, actual and allowed charges by carrier, and the Area Resource File, showing over 50 characteristics at the county level.

Prevailing fee data were adjusted for cost of living by means of a regression model. Variables that determine the cost of living were identified, and index levels were assigned to each county based on values for the important variables - population, per capita income, and region. The cost of living measure used in the equation was based on Bureau of Labor Statistics high-income budgets for 41 SMSAs and four regional non-SMSA urban areas. The adjusted fees were then used as variables in equations testing the influence of fees on physician density, and the influence of physician supply on fees. Unadjusted fees were also used in these tests. Still other regressions were used to analyze the determination of assignment rates and their stability over time (Table 4-2).

Table 4-2 Summary of IOM Study Results

Independent Variable	Dependent Variable				
	Physician supply		Medicare specialist fee index		Assignment rate 1972
Equation	1*	2	3*	4	
Table	3	4	5	6	
MD/population	-	-	U,S	U,S	U,S
Medicare specialist fee index	U,S	-		-	
HIAA surgical fees	-	U	-	-	
Number of medical schools	U,S	U,S	U,S	U	
Per capita income	U,S	U,S	U,S	U,S	U,S
SMSA population	U,S	U,S	U,S	U,S	
Region 1-4	U S(1,2)	U S(1,2)	U S(all)	U S(all)	U S(1)
Percent of population 65+	U	-	U	-	U,S
Number of hospital beds	-	-		U,S	
Carrier reduction rate					U,S
R^2	.35	.35	.17	.31	.46

U = used

S = significant

* Fees adjusted for cost of living

Regions
1 East
2 South
3 Rockies - Great Plains
4 West

Source: IOM Part 3 (Technical Appendix) pp. 165, 166, 169, 171, 173.

Density as Dependent Variable

The study of physician density drew on previous research findings which indicate that physicians are attracted to the following characteristics of areas: (The words in parentheses show the variable introduced by IOM to measure each effect).

1. Association with peers (number of medical schools)
2. Quality of schools and culture (per capita income)
3. Per capita income (same)
4. Metropolitan areas (SMSA population)
5. East and West coast (dummy)
6. Percent 65+ (same)

While area of medical training is also believed to influence location, no data were available. Fees were measured by an index of the prevailing charge level for each of 39 procedures for specialists weighted by population 65 years and over, adjusted for the cost of living and expressed for each county as a relative of the national weighted average.

The factors from the above list that influenced supply of doctors included medical schools, per capita income, region, and SMSA population. However, this last influence was negative, possibly owing to poverty of inner-city residents.

Medicare fees were found to have a positive influence on supply, after correcting for these factors. But private insurance fees did not affect physician density.

Fees as Dependent Variable

The determination of Medicare prevailing fees and HIAA fees is examined by equations that are defined as loci of equilibrium points of demand and supply curves for counties. The independent variables are as follows:

1. Per capita income - a proxy for physician supply and demand (ability to pay + superior knowledge of MD services)

2. Percent of population 65 and over - a proxy for demand

3. MD density - expected to be negatively correlated with prices

4. Medical schools - a supply variable

5. SMSA population - a measure of suppliers' preference for metro areas.

6. Regional variables - reflecting carrier practices (demand-related) and communication among MDs (supply-related).

For explaining adjusted fees, region medical schools, income, MD density and SMSA population are significant. The model for unadjusted fees also shows MD density, per capita income, and SMSA population to be influential, and also hospital beds, a variable not used in the adjusted-fees equation. Since three of these variables explain cost of living differences, the variance in the independent variables is greater than in the adjusted-fee equation. R^2 was .31 for unadjusted and .17 for adjusted fees.

The determination of assignment rate is explained in terms of per capita income (less assignment with more ability to pay), physician density (more assignment where there is a higher density), carrier rate of claims reduction (less assignment with more reduction, and particularly if there was more reduction in the previous year), and percent of population aged 65 and over (less assignment with higher concentration). All results are consistent with profit-maximizing. There is a weak relationship with region and mean allowed charge has a slight positive effect. In four years for which equations were estimated up to 48% of the variance was explained by the model. Variation across specialties and by size of Medicare practice could not be analyzed.

Critique

The IOM fee screen analysis was part of a set of studies on third party reimbursement in relation to optimal distribution of the doctor supply. It includes examination of the determination of fees, physician density, and assignment rates.

Many relevant factors in the market for physician services cannot be easily studied because of the absence of disaggregated and comparable data applicable to all parts of the country. Other problems relate to whether dynamic relations are appropriately expressed, variations in inputs expressed by a particular procedure code, methods to control for cost of living differences when comparing fees, and the varied meanings of price to participants in the market. Certain variables capture more than one effect and need adjustment. The appropriate weighting of procedure prices to permit comparisons across specialties and localities is of particular concern.

Despite these problems, the IOM studies do show an interrelationship between fees and physician supply, and an effect of socioeconomic factors on these variables. The principal finding is that the reasonable charge process does not bring about a "rational" distribution of physicians across localities and is unlikely to do so. It is suggested that **low payments are an obstacle to access, and that fee restraint** discourages assignment of claims. Changes in the payment system appear to be needed.

Cost of Living Adjustment

Because indices are used to compare payment levels of different third parties and to compare aggregates of procedures and specialties across areas, a method of adjusting for the cost of living was employed. An alternative approach would be direct entry of the socioeconomic variables that influence cost of living into the multiple regression equations. Then additional socioeconomic variables that may influence nominal fees either through cost of living or through demand/supply routes generally can be included. In fact the IOM does enter the variables with significant relationships to BLS budget price level in its central equations.

Although counties within an SMSA may differ in cost of living, a single adjusted fee was computed. This is a problem when the fee is being interpreted as the stimulus

to supply. The value of the fee to the physician in terms of the cost of living in a particular part of the SMSA is not necessarily the same as the single SMSA-wide adjusted fee.

When one considers fees as the stimulus to demand under Medicare, prices as perceived by patients are what counts, and the differences within SMSAs retain their relevance for some patients. Copayments and the residual payment in non-assigned cases represent patient sacrifice or net (perceived) price. Insofar as patients migrate for care across county lines there is economic meaning to a single adjusted market price. For those that do not migrate, other adjustment methods can be used, e.g., a differential based on the ratio of per capita income in the county to the average for the whole SMSA.

Whether the BLS budget provides a good deflator needs further analysis. The BLS estimates of family budgets are developed for urban areas only with selected SMSA and four regional non-SMSA urban estimates for places with populations of 2,500 to 50,000[1/]. The budget is computed for a family of 4 - an employed husband age 38, a wife who is not employed, an 8-year old girl, and a 13-year old boy.[2/]

The BLS higher income budget may not be best for a cost of living adjustment when fees are considered as the stimulus to demand, since the incomes of aged persons tend to be low. It is a more appropriate choice when nominal fees are being deflated to show the stimulus perceived by physicians. While the difference may not be large enough to warrant two separate deflators, alternative representation of these effects would avoid the problem.

The relationship of the standard budget to the CPI is not a clearcut one. The rationale for using the former is presumably the BLS' caution that the CPI is not to be applied to interareal comparisons but is reserved for intertemporal comparison in a given area. Yet the expenditure surveys are undertaken only at in-

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1/ BLS Revises Estimates for Urban Family Budgets and Comparative Indexes for Selected Urban Areas Autumn 1975; News, U.S. Department of Labor, Bureau of Labor Statistics, USDL: 76-759, p. 16.

2/ Ibid.

tervals of several years and the CPI is used to update the budget in the intervening years. The autumn 1975 revision was issued with the notation that the CPI has been used to update the estimates since 1969. It is not clear that the results, for IOM, are different from those of using the CPI directly.

Since complex CPI revisions were recently made by BLS,[1/] more accurate estimates in wider areas will be available. However, the differential effects on physicians and retirees need to be examined.[2/] The retired will be represented in the new index for all civilian households living in urban areas.

Determination of Fees and Physician Supply

Measurement of Medicare fees was another area for which the IOM approach had its limitations. The use of prevailing charges for measurement of fees was dictated by availability but their relation to mean, mode and median of charges varies across specialties and localities. Consequently, the price that is perceived as the return to activity by physicians and as the signal for location choice may be overstated by the prevailing in some cases and understated in others.

Use of the specialist fee index to represent Medicare fees is not ideal because of the significant share of the Medicare market represented by GPs.[3/] The prevailing fee is not necessarily an accurate indicator of sacrifice by patients because of residual payments when submitted charges exceed allowed charges. The distribution of this burden will vary across areas according to assignment practices. County indices for groups of procedures in which frequencies and actual mean charges are used as weights cannot be compared to each other since

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1/ BLS Report 484 Revising the CPI: A Brief Review of Methods 1976.

2/ For example, the inclusion of net depreciation in house values as a positive element in shelter costs and of capital gains in house values as an offset. This has a particular meaning for persons who do not intend to sell their house in their lifetime.

3/ The CUNY study used specialist, general practitioner, and combined fee indices.

they are computed using different bases. Use of unweighted mean fees would be a better measure of relative payment levels. The weighted index measures relative expenditure.[1/]

Socioeconomic Variables

While socioeconomic variables play a part in fee determination, they may be difficult to interpret because they either contain more than one economic effect (possibly even working in opposite directions) or are not closely related in their variation to the factor that they are intended to represent. Consequently both explained variance and significance of coefficients may be reduced.

An example of these problems is per capita income. It is a mixed indicator. Superior capacity to perform health-related activities at home makes income a negative factor in demand at the same time that ability to pay and superior knowledge of the market make it positive. Moreover, although per capita income is used to represent educational and cultural level, information from the Statistical Abstract of the U.S. (1975) shows that there is a poor correlation between state rank in per capita income and public expenditures on education.

There is a similar problem for region, used by the IOM as five groupings. As a proxy for communication among physicians (sharing of fee decisions and market information) it is gross. As an indicator of carrier practices, it is compromised by the fact that these may vary more within than between regions. SMSA population is a crude indicator of demand and needs to be adjusted for percent in poverty. Using per capita income in an estimating equation does not adjust sufficiently for this because of the skewed distribution of incomes.

Mutual Determination

The relation of fees and physician density should be considered in the context of time. Changes in density involve adjustment of stock by flow in or out of localities. A fee structure in year t can be expected to result in physician

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1/ The CUNY study used both weighted and unweighted indices and the regression results tended to be similar except for minor variations.

movement over several years because of impediments to mobility (knowledge level, search activities, personal relocation and arranging for professional entry).

Conversely, entry of new doctors in a given year would impinge on fees in a later time period. This would take less time than supply movement; experience indicates that fees can be adjusted far more quickly than had been assumed. In measuring these interactions over time, fee information should be supplemented by other information on price behavior. In order to avoid retaliation and price comparison, physicians may respond to entry of new doctors by providing rebates, e.g., by providing follow-up visits at no charge, rather than submitting bills for initial or comprehensive visits at reduced prices and bringing down their Medicare profile. With competition, physicians may also stop submitting bills for extra consultations or reports by which they sometimes augment bills for surgery or other major episodes. Such behavior may be analyzed by examining the Medicare service profile and actual charges of individual doctors in areas where a change has occurred.

Physician Supply

Finally, the measurement of physician supply by density needs to be corrected for productivity by subtracting non-practicing physicians from the stock, and taking hours and weeks of work into account. Stock should be adjusted for services of aides and capital equipment and for use of hospital resources to augment physicians' own inputs.

CUNY's study of discretionary practices and their effect on fees made certain modifications of the IOM's analysis of nationwide fee determination. Specialist and GP fees were considered separately to avoid index weighting problems. Socioeconomic factors that could affect prices in a locality were entered directly in equations for fee determination rather than being represented indirectly

through an adjustment based on a regression. Other adjustments were made in selecting variables for factor analysis.[1/] Still modifications that might be desirable could not be made because of lack of data. Disaggregated data were not available for adjusting numbers of physicians according to hours worked. Locality data on assignment rates which, considered together with fees, indicate perceived price of services or effective fees, do not exist.

Some modifications, while methodologically preferable, eventually amount only to refinements, but others may affect more substantially the extent to which fee variance can be explained. One feature of the IOM study that was clearly in need of modification was the overstatement of causal relationships by allowing one degree of freedom for each county observed. Since carrierwide practices are involved, the appropriate count of degrees of freedom is based on the number of carriers.

1/ Since mean income levels can be high even when there is much poverty, income was adjusted by entry of a measure of percent in poverty (AFDC recipients) in each locality. The influence of medical schools on a local health care market was measured by using a continuous variable, enrollment, rather than a dichotomous variable, presence of a medical school. In addition, physician supply was adjusted to reflect only those in office-based patient care.

APPENDIX

Study of Physicians' Income in the Pre-Medicare Period 1965, by Zachary Dyckman, HEW Pub. (SSA) 76-11932, 1976

The data analyzed consisted of Internal Revenue Service data for 1965 for approximately 22,000 physicians selected from the AMA directory, in 10 Specialty groups. (Aggregate data reveal that in 1965, the median income of 214,646 practicing physicians was $23,744. Physicians in partnership practices earned $33,585, sole practitioners earned $26,282 and the salaried physicians earned $15,902.)

The main findings of the study are as follows:

Physician earning vary by region. They are highest in the North Central region ($26,500), and lowest in Northeast ($21,300). Those in SMSAs have slightly more income than in rural areas, but much of the difference may be due to specialty distribution. Earnings were highest in small SMSAs and lowest in large SMSAs. (These findings are consistent with physicians' preference for practice in large cities.)

Physician earnings were found to increase with age until the 45-54 age group and then to decrease. This holds true for all physician specialties except general practitioners, whose earnings were about the same in the 35-44 as in the 45-54 age groups. The decreased earnings after age 54 may reflect a reduction in hours worked. In the case of pathologists, the decrease with age is insignificant, possibly because the size of their staffs or laboratories may increase to offset the decrease in their own hours of work.

Dispersion of income is greatest among the young and older age groups of physicians, and among specialties, it is greatest among pathologists and anesthesiologists. Income dispersion is not significantly affected by location.

Income varies by specialty, which is determined by the physician's self-description for listing in the AMA directory. Radiology, pathology and surgery are the high-earning specialties, median earnings of the self-employed being $43,345, $42,932

and $34,331 respectively. General practitioners were the lowest earners, the median income of the self-employed being $23,027. The differential between specialist and GP income increases with age. Median earning of GPs in the 35-44 age group were about the same as for all practicing physicians. Within specialties, earnings of board-certified physicians tend to be higher than of non-board-certified. The higher earnings of specialists cannot be explained by shorter hours or longer vacations. Female MD's earn about 1/3 less than males. Foreign medical graduates earn less than graduates of domestic schools.

As income of sole-proprietor physicians increased, expenses as a percent of gross receipts declined. For most specialties, labor expenses were about 10 percent and non-labor expenses 30 percent of gross receipts. Expenses as a proportion of receipts ranged from 36 percent in the Northeast to 46 percent in the West. As physicians' income increases, non-practice income decreases. (This is contrary to expectation, and the most plausible explanation is sophistication in reporting income, such as farm income losses, for tax purposes.) There was variation in non-practice income by region.

The study of Physician Income in the Pre-Medicare Period provides a useful description of the market equilibrium for physician earnings in 1965. It does not necessarily describe a norm or indicate optimal distribution of medical services.

The Effects of the Medicare Method of Reimbursement on Physicians' Fees and on Beneficiaries' Utilization. Volume II, Part I of HIBAC Report, July, 1973

Effects on Physicians' Fees by Lien-fu Huang and Orest Koropecky, Robert R. Nathan Associates, Inc., April, 1973.

The Huang and Koropecky study statistically analyzes the effects of the vector of statutory, administrative and financial conditions identified within the Medicare method of reimbursement on physician fees and on the interrelationship of these conditions with rates of assignment and reduction of claims.

These conditions can be seen most compactly in Table 4-6. Some of the important discretionary practices affecting physician fees from 1967 to 1969 are no longer permitted to vary, and these are denoted by the arrows from the discretionary to the unvarying column in the table. The most significant of the practices made mandatory are the use of alternatives to the RCP method of reimbursement and the frequency of updating. Variations in both of these were shown to affect significantly the rate of change of physician fees and the rates of claims reduction. Table 4-7 (to be analyzed below) presents a summary of representative regressions from the paper and these practices are shown as variables (15) and (16) in equations 1 and 3.

The data employed in this study, called the RRNA Special Tape File, had been constructed from various 1969 sources. Data from the Current Medicare Survey (CMS), the Demographic Record (DR) of the CMS, and the Reasonable Charge Tabulations were merged with data on assignment rates. The CMS and DR surveys use a two-stage probability sample design. Primary sampling units were Standard Metropolitan Statistical Areas, a single county or several adjacent counties. Enrollees in all 50 states and the District of Columbia were represented.

Table 4-3

CHANGES IN STATUTORY AND DISCRETIONARY PRACTICES FOLLOWING THE HIBAC STUDY, UP TO 1976

(Arrows show practices subject to new regulations after HIBAC)

Discretionary Statutory, Administrative or Financial Practices	Regulatory Modifications After HIBAC
Carrier-physician relationship	
1. Fee schedule of RVS or ceiling as alternative to CPR in determining reasonable charge →	A. CPR
2. Computation of customary a. Minimum number of charges b. Minimum number of like charges	
3. Computation of prevailing a. Minimum number of customaries b. Use of invalid charges for later customary c. Percentile position →	B. 75th percentile
4. Frequency of updating →	C. Updating is at fixed intervals and is based on an economic index.
5. Recognition of specialty →	D. Recognition
6. Merger with other business	
7. Acceptance of assignment	
8. Waiver of coinsurance or deductible	

Statutory Conditions Not Affected by Carrier Practices

E. Patient eligibility

F. Amount of monthly premium

G. Amount of deductible

H. Coinsurance rate

Additional sources of data for many of the independent variables in Table 8 and Equation A (below) are shown under the appropriate variable.

The coefficients presented were estimated ultimately by the ordinary least squares regression method. Alternative methods of estimation were tried but did not yield substantially better results. The regressions were limited to 35 carriers, each of which was entirely within a given state, in order to allow consideration of social and environmental data.

Two contexts are used for analysis. The first analysis attempts to show the responsiveness of changes in physician fees to the Medicare method of reimbursement rather than to the growth of insurance. The researchers' judgment of the best equation result is shown below.

$$P = 2.3174 + .3682\ x_1 + .0756\ x_2 + 1.7635t$$
$$\qquad\qquad (.1306) \qquad (.0262) \qquad (.5006)$$

P = rate of change in physician fees

x_1 = rate of change in the CPI

x_2 = rate of change in percent of 3rd party payment

t = dummy for years after Medicare

( ) = standard error

Sources: P BLS Physician Fee Index

x_1 Handbook of Labor Statistics (For full source see Table 4-7.)

x_2 Social Security Bulletin

The first variable represents inflation, the second represents the extent of insurance coverage, and the dummy variable represents the method of payment under Medicare. This equation shows that the Medicare method of payment significantly affects the rate of increase in physician fees. If there were no inflation (percentage change in CPI = 0) and no extension of health insurance to the population (rate of change in percent of third party payment = 0), the BLS Physician Fee index would still grow 4.1% (2.3174 + 1.7635%) per year with Med-

Table 4-4

FACTORS AFFECTING CHANGE IN PHYSICIAN FEES, ASSIGNMENT RATES AND CLAIMS REDUCTION RATES UNDER MEDICARE

1967 - 69

DEPENDENT VARIABLES/ INDEPENDENT VARIABLES	(1) Rate of Change of Medicare Physicians' Fees 1967-69 (EQ.1, Table 4)	(2) Assignment Rates, 1969 (EQ.3,Table 4)	(3) Percent Reduction of Physicians' Charges, 1969 (EQ. 4, Table 16)
(1) Constant	25.557	79.509	-1.419
(2) West Census region (West)	7.052 (1.762)		.668 (.646)
(3) Percent of population 65 and over in cities over 100,000, 1968 (city)		-.261 (.126)	
(4) 75 and over as a percent of 65 and over in U.S., 1968 (age)	-.536 (.373)	.830 (.809)	
(5) Whites as % of population over 65, 1970 (white)		-.072 (.133)	-.054 (.024)
(6) State per capita income, 1969 (income)		-.011 (.004)	
(7) Percent of population under 65 with surgical insurance, 1968 (PMSI)		.259 (.149)	
(8) Proportion of Part A enrollees not bought in by state, 1968 (NBI)	.145 (.110)	-.558 (.169)	.067 (.035)
(9) Total non-federal physicians per 100,000, 1968 (phys.)	.213 (.061)	-.121 (.109)	

Table 4-4 (continued)

FACTORS AFFECTING CHANGE IN PHYSICIAN FEES,
ASSIGNMENT RATES AND CLAIMS REDUCTION RATES UNDER MEDICARE
1967 - 69

DEPENDENT VARIABLES/ INDEPENDENT VARIABLES	(1) Rate of Change of Medicare Physicians' Fees 1967 - 69 (EQ. 1, Table 4)	(2) Assignment Rates, 1969 (EQ. 3, Table 15)	(3) Percent Reduction of Physicians' Charges, 1969 (EQ. 4, Table 16)
(10) Non-Federal Physicians, Medical Specialties Per 100,000 1968 (Phys-Spec)			.087 (.039)
(11) Mean Allowed Charges, 1969 (AP69)		1.984 (1.244)	
(12) Mean Allowed Charge (1967) (x)Assignment Rate (1968) (AP67 x ASR68)	-8.306 (1.169)		
(13) Mean Physician Charge (1967)(X) Unassignment Rate (1968) (P67 x (1-ASR68)	-7.895 (1.102)		
(14) Standard Deviation of Physicians' Charges All Services, 1969 (SD of P)	1.522 (.238)		
(15) FEE Ceiling	-4.682 (2.532)		
SCHEDULE (RVS)	-4.154 (1.993)		
(16) BASIS OF PREVAILING Medicare Only		-4.137 (3.679)	
Own Business Only		-8.296 (4.316)	

Table 4-4 (continued)

FACTORS AFFECTING CHANGE IN PHYSICIAN FEES,
ASSIGNMENT RATES AND CLAIMS REDUCTION RATES UNDER MEDICARE
1967 - 69

DEPENDENT VARIABLES/ INDEPENDENT VARIABLES		(1) Rate of Change of Medicare Physicians' Fees 1967-69 (EQ. 1, Table 4)	(2) Assignment Rates, 1969 (EQ. 3, Table 15)	(3) Percent Reduction of Physicians' Charges, 1969 (EQ. 4, Table 16)
(17)	Updating Frequency			
	6-12 Mos.			3.162
				(.956)
	6 Months	6.742		2.600
		(2.465)		(1.084)
	Irregularly			.498
				(.885)
(18)	Blue Shield Carrier (BS)		-3.160	1.890
			(3.118)	(.674)
R a/		.9150	.7895	.6927
R^2 a/		.8372	.6233	.4798

Standard errors in ( )

a/ The Huang and Koropecky report used unadjusted multiple correlation coefficients; coefficients of determination are computed by us.

Sources of Table 4-4

Source for indicated variable number

(3) 1970 Census of Population, Tables 20, 40

(5) Health Insurance and Health Care Statistics, Health Insurance Institute, N. Y., 1970

(6) Statistical Abstract of the United States, 1970, Table 25

(7) Reasonable Charge Tabulations, Part B Bills, 1971 Tables 2A, 2B

(8) Statistical Abstract of the United States, 1969 - 1971

(12) P (mean actual charge) from Reasonable Charge Tables ASR (assignment rate) from Net Assignment Rate (1968) Table 2A
and RS Health Insurance Statistics, 1969

(14) 1970 Census of Population, Table 20

(15) U.S. DHEW, Selected State Data, Medicare, Fiscal Years 1967 - 70

(17) Reasonable Charge Tabulations, Table 2X, 1970

TABLE 4-5

SELECTED REGRESSIONS OF RATES ON CHANGE IN PHYSICIAN FEES,

ASSIGNMENT RATES AND CLAIMS REDUCTION RATES AS AFFECTED BY MEDICARE PART B

REIMBURSEMENT METHODS 1967 - 69

DEPENDENT VARIABLES / INDEPENDENT VARIABLES	(1) Rate Of Change Of Medicare Physicians' Fees, 1967-69 (EQ.1, Table 5)	(2) Rate Of Change Of Medicare Physicians' Fees 1967-69 (EQ.1, Table 4)	(3) Assignment Rates, 1969 (EQ.3, Table 5)	(4) Assignment Rates, 1969 (EQ.3, Table 15)	(5) Percent Reduction of Phys. Fees, 1969 (EQ.8, Table 5)	(6) Percent Reduction Of Physicians' Charges, 1969 (EQ.4, Table 16)
(1) Constant	19.604	25.557	104.683	79.509	-2.475	-1.419
(2) West Census Region (West)	9.100 (3.245)	7.052 (1.762)			.317 (.754)	.668 (.646)
(3) Percent of Population Over 65 In Cities Over 100,000, 1968 (City)			-.250 (.128)	-.261 (.126)		
(4) Total Non-Federal Physicians Per 100,000, 1968 (Phys)	-.097 (.090)	.213 (.061)	.236 (.095)	-.121 (.109)		
(5) Percent Of Population Under 65 With Surgical Insurance, 1968 (P,MSI)	.223 (.157)		.251 (.150)	.259 (.149)	.037 (.036)	
(6) "Over 75" As A Percent of "Over 65" In U.S., 1968 (Age)	-1.021 (.489)	-.536 (.373)	.078 (.605)	.830 (.809)		
(7) Mean Allowed Charges, 1969 (AP69)				1.984 (1.244)		

Continued

TABLE 4-5 (continued)

SELECTED REGRESSIONS OF RATES ON CHANGE IN PHYSICIAN FEES,

ASSIGNMENT RATES AND CLAIMS REDUCTION RATES AS AFFECTED BY MEDICARE PART B

REIMBURSEMENT METHODS 1967 - 69

DEPENDENT VARIABLES / INDEPENDENT VARIABLES		(1) Rate Of Change, Of Medicare Physicians' Fees, 1967-69 (EQ.1, Table 5)	(2) Rate Of Change Of Medicare Physicians' Fees 1967-69 (EQ.1, Table 4)	(3) Assignment Rates, 1969 (EQ.3, Table 5)	(4) Assignment Rates, 1969 (EQ.3, Table 15)	(5) Percent Reduction of Phys. Fees, 1969 (EQ.8, Table 5)	(6) Percent Reduction Of Physicians' Charges, 1969 (EQ.4, Table 16)
(8) State Per Capita Income, 1969 (Income)		-.00134 (.00390)		-.01103 (.00339)	-.011 (.004)	.00186 (.00087)	
(9) BASIS OF PREVAILING:	Medicare Only				-4.137 (3.679)		
	Own Business Only				-8.296 (4.316)		
(10) UPDATING FREQUENCY	6-12 Mos.						3.162 (.956)
	<6 Months		6.742 (2.465)				2.600 (1.084)
	Infrequency						.498 (.885)
(11) Blue Shield Carrier (BS)					-3.160 (3.118)		1.890 (.674)
(12) Mean Physician Charge (1967)(X) Unassignment Rate (1968) (P67 x (.1-ASR68))			-7.895 (1.102)				

continued

TABLE 4-5 (continued)

SELECTED REGRESSIONS OF RATES ON CHANGE IN PHYSICIAN FEES,

ASSIGNMENT RATES AND CLAIMS REDUCTION RATES AS AFFECTED BY MEDICARE PART B

REIMBURSEMENT METHODS 1967 - 69

DEPENDENT VARIABLES / INDEPENDENT VARIABLES	(1) Rate Of Change Of Medicare Physicians' Fees, 1967-69 (EQ.1, Table 5)	(2) Rate of Change Of Medicare Physicians' Fees 1967-69 (EQ.1, Table 4)	(3) Assignment Rates, 1969 (EQ.3, Table 5)	(4) Assignment Rates, 1969 (EQ.3, Table 15)	(5) Percent Reduction of Phys. Fees, 1969 (EQ.8, Table 5)	(6) Percent Reduction Of Physicians' Charges, 1969 (EQ.4, Table 16)
(13) Mean Allowed Charge (1967)(x) Assignment Rate (1968) (AP67 x ASR68)		-8.306 (1.169)	.018 (.126)			
(14) Whites As % of Population Over 65, 1970 (White)				-.072 (.133)	-.020 (.024)	-.054 (.024)
(15) Proportion Not Bought in By State, 1968 (NBI)	.347 (.172)	.145 (.110)	-.460 (.171)	-.558 (.169)		.067 (.035)
(16) FEE SCHEDULE — Ceiling		-4.682 (2.532)				
(16) FEE SCHEDULE — (RVS)		-4.154 (1.993)				
(17) Standard Deviation Of Physicians' Charges All Services, 1969 (SD of P)		1.522 (.238)				

Continued

TABLE 4-5 (continued)

SELECTED REGRESSIONS OF RATES ON CHANGE IN PHYSICIAN FEES,

ASSIGNMENT RATES AND CLAIMS REDUCTION RATES AS AFFECTED BY MEDICARE PART B

REIMBURSEMENT METHODS 1967 - 69

DEPENDENT VARIABLES/ INDEPENDENT VARIABLES	(1) Rate of Change Of Medicare Physicians' Fees, 1967-69 (EQ.1, Table 5)	(2) Rate of Change Of Medicare Physicians' Fees 1967-69 (EQ.1, Table 4)	(3) Assignment Rates, 1969 (EQ.3, Table 5)	(4) Assignment Rates, 1969 (EQ.3, Table 15)	(5) Percent Reduction of Phys. Fees, 1969 (EQ.8, Table 5)	(6) Percent Reduction Of Physicians' Charges, 1969 (EQ.4, Table 16)
(18) Non-Federal Physicians, Medical Specialties Per 100,000 1968 (Phys-Spec)					-.030 (.054)	.087 (.039)
R[a/]	.6577	.9150	.7183	.7895	.5235	.6927
R^2[a/]	.4326	.8372	.5160	.6233	.2741	.4798

Standard Errors in parenthesis

a/ Huang and Koropecky report used unadjusted multiple correlation coefficients, coefficients of determination are computed by us.

icare, compared to 2.3174% without. Medicare's method of payment alone yields a 1.8% increase in physician fees.

The second analysis attempts to relate the growth of Medicare physician fees to specific discretionary policies under the Medicare method of payment. The numerous equations are most readily summarized in Table 4-7. One equation is given for each of the three dependent variables: rates of change in physicians' fees, the assignment rate and the claims reduction rate.

One of the more interesting results as to physician fees is shown by the two components of the previous year's price, variables (12) and (13) in equation 1. The coefficients are both negative and significant, confirming the hypothesis that the carrier with higher previous-year prices will experience lower rates of growth in Medicare fees. In addition, the wider the dispersion of fees (var. (14, Eq. 1), the faster the growth of Medicare fees, possibly reflecting the greater opportunity of physicians to catch up to the higher fee level. In the fee equations, the variables for frequency of updating (17, Eq. 1) and for the use of ceiling or RVS fee schedules are significant (15, Eq. 1). Ceilings on fees are more effective than RVS schedules. Both of these are now fixed by law. The sign of the population age variable (4) is the opposite of what was expected in equation 1.[1/] From equation 2 on assignment rates, one can see that income (var. 6) and percent of aged population in cities (var. 3) have the expected signs and are significant among the demographic variables. As the mean charge allowed increases (var. 11), assignment rates can also be seen to increase. For the reduction rate (Eqs. 3), frequency of updating (var. 17) seems to have an important effect. Whether the carrier is a Blue Shield organization (var. 18) is also influential.

1/ It has been noted that persons at higher ages have greater access problems, which may restrict demand. They may also be institutionalized and their income may be lower.

The Huang and Koropecky study revealed the effects of certain aspects of Medicare administration on fees based on 1969 data. Subsequently, more information on specific practices of carriers became available and some of the parameters ceased to be current, partly through the impact of the work of these analysts. Also, with additional years of experience under Medicare, environmental changes, including inflation and specialization trends, have had an opportunity to influence the administration of the program and its outcomes.

A Report on the Results of the Study of Methods of Reimbursement for Physicians' Services Under Medicare; Factors Physicians Take into Account, HIBAC Report, July 1973; Appendix C "The Research Triangle Institute Report", August 1972.

A survey of practicing physicians was conducted by the Research Triangle Institute to obtain information on how Medicare provisions affect assignment and billing for copayments. The study was conducted in California, Massachusetts, New York, New Jersey, Florida, and Ohio. An 84.9% response rate was reported among those contacted, but there were losses owing to vacation, illness, etc. such that only 56.2% of the initial sample was included. (314/559).

Although there were differences among areas, in general, major factors in acceptance of assignment were identified on the basis that the doctor considered the factor at all in making the decision, and on the importance assigned to it. Acceptance of assignment was reportedly discouraged by patient ability to pay charges from personal funds or other health insurance, and by substantial differences between the physician's customary charge and the Medicare maximum allowable payment. Acceptance was more likely if the bill was large, if the patient was also a Medicaid recipient and if the doctor had a close personal relationship with the patient. The fact that assignment assured timely payment was also viewed as important. The criteria for selection included: representation of urban and rural differences, and urban/rural mixes; representation of carriers with different ways of applying charge guidelines, and representation of major relevant specialty services. Within each of the six areas, the population of physicians was restricted to office-based patient care. The AMA Masterfile was used for selecting physicians. The physicians were grouped by specialties; the groups were chosen to be of relatively equal size and were defined in terms of their relevance to the health care of older patients.[a/] Time since graduation was also considered so as to permit analysis of results by level of experience and contemporary training. A total of 314 physicians were interviewed. They were asked the percent of their patient load with Medicare coverage.[b/] It is esti-

a/ RTI Table 2 (B)

b/ The results are shown in RTI Table 7, p. 17.

mated that between 50 and 75 percent of doctors' practices in all areas except Florida have 25 percent or fewer Medicare patients. Most of the patients had annual family incomes between $5,000 and $15,000, but in Massachusetts and New Jersey most patients had between $5,000 and $10,000.[a/] No significant differences were observed among specialties.[b/]

This study provides information about the factors considered by the physicians in deciding whether to accept assignment, and the adoption of special billing arrangements to cope with deductibles and coinsurance. The data are compared by geographical area and by specialty within each area.

Acceptance of Assignment

The frequency with which physicians accept assignment in each area is shown in RTI Table 32. The most marked differences among areas concern Massachusetts, Ohio, and Florida. Massachusetts has a high rate of acceptance of assignment and Ohio and Florida have lower rates. RTI Table 33 shows the frequency of assignment by specialty. Specialty differences are not consistent from state to state. In Massachusetts, physicians in surgical and radiological specialties (specialties 3 and 4) have high rates of assignment. In Ohio, 77% of physicians in general and family practice (specialty 1) never accept assignment. In New York and New Jersey, most physicians in specialty 1 accept assignment only in selected cases.

Physicians who indicated they never accept assignment were asked about certain patient-related and program-related factors that they may have considered in making a decision.[c/] The patient-related factors included: ability to pay, timeliness of payment, personal relation with patient, size of the bill, uncertainty of deductible status, patients with Medicaid, competitive private insurance, types

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a/ The percent of physicians' total patient load, Medicare and non-Medicare, by family income level in each area is shown in RTI Tables 20-25.

b/ The percent of physicians' patients by family income by specialty in each area is shown in RTI Tables 26-31.

c/ The results are shown in RTI Tables 40-45 for each area studied and Table 46 by specialties.

of service or procedure, patient hospitalized or not, and poor prognosis.

The most important single patient-related factor in accepting assignment is patient's ability to pay (i.e., to pay more than the patient share of the Medicare allowed charge.) Area differences in the percent considering this very important are as follows:

Florida	71.9%
Ohio	62.4%
Massachusetts	50.1%
California	39.8%
New York	34.1%
New Jersey	28.6%

Physicians who consider this a very important factor are more likely to be in specialties 1 and 2 - that is, physicians in general and family practice and those in specialties pertinent to treatment of older patients. In contrast, physicians in specialties 3 and 4 considered it only somewhat important.

The second most important factor considered is personal relationship with the patient. Doctors tended to accept assignment from patients who are well known to them. This factor was considered as very important by the physicians in specialty 2 in New York, California, Florida, and Ohio. The third factor considered is whether the patient has Medicaid or not. In New York, almost without exception, physicians in specialties 3 and 4 consider this an important or very important factor. The same pattern is observed in California. Timeliness of payment was considered as the second most important factor by the physicians in Massachusetts, especially in specialties 1 and 2. The size of the bill was considered by 37.5% of physicians in New Jersey, but not given high importance.

Program-related factors in accepting assignment included amount of paperwork, assurance of payment, complexity of program, lack of understanding, need to determine status, delays in payment, uncertainty of allowance, and allowance less than charge. All of these factors mitigate against the physician's accepting assignment, except for "assurance of payment", which encourages acceptance. From the results in RTI Tables 52-57, it is seen that assurance of payment is one of the top two factors in every area. In four out of six areas, the fact that the fee allowance is less than the physician's charge was among the top three factors considered by physicians.

The $50 Deductible

The study considered also the extent to which those physicians who accept assignment at least some of the time experienced difficulty in collecting the annual $50 deductible. In general, there was little difficulty. Very few physicians in any area indicate they have special techniques for handling the $50 deductible.

The 20 Percent Coinsurance

RTI Table 68 describes difficulty in collecting coinsurance among physicians accepting assignment. In Massachusetts, with the highest assignment rate, 40 percent of physicians do have difficulty in collecting the coinsurance one-fourth of the time or more.

Physicians who accept assignment also were asked to indicate how often they bill for the deductible and omit billing for coinsurance. Twenty percent of the physicians in California always bill for the deductible but not coinsurance, and an additional 13 percent do some of the time. (RTI Table 72, p. 75). In Ohio, where acceptance of assignment is low, 18 percent of the physicians operate in this way some of the time, and one physician in three in New Jersey do so. There was no meaningful pattern in this regard by specialty in any of the areas.

PART B

THE CUNY NATIONAL STUDY

CHAPTER 5

MEDICARE FEE LEVELS

Part B, the national study examines Medicare fee distributions, carrier discretionary practices in reasonable charge determination, and carrier administrative performance. It also analyzes the effects of carrier behavior on fees and assignment. In Chapter 5, the central measures of Medicare fees under the jurisdiction of the various carriers are presented for GPs and for specialists. The influence of the economic index on prevailing fees is also considered.

Sources of Fee Data

Two sources were available for analysis of Medicare fees: 1971 payment records for all physician services and prevailing fees for 50 leading procedures in FY 1976 and FSY 1977. Physician Assignment Tabulation ASGN-5 for 1971 payment records, supplied to us by HCFA, was reviewed in order to obtain measures of central tendency in reasonable charge data.

The fact that only grouped data were available affected the computation of measures of central tendency. The mode shown in Table 5-1 is the midpoint of the modal interval; the median is interpolated within the interval including the 50th percentile; the mean is based on truncated data, reasonable charges of $900.00 and over being excluded. A summary of these measures of central tendency is shown in Table 5-1. The distribution of all charges and the distributions for most individual specialty charges are positively skewed (mode<median<mean). Therefore care should be exercised in using these reasonable charge data in analysis, especially when an assumption of normality is vital to the validity of results.

Our major source of information on Medicare fees was data on 50 leading procedures originally obtained by HCFA from carriers. IL 76-33 requested prevailing charge screens for frequently performed Part B medical procedures for Fiscal Year 1976 and Fee Screen Year 1977. The adjusted prevailing and the unadjusted 50th percentile fees were the items requested. Form SSA 3364 required that fees be shown for general practitioners and specialists separately for each carrier locality.

The first step in analysis of the data was examination of scatter diagrams of fees by procedure as well as basic descriptive statistics. Both of these indicated the need to eliminate outlying values as can be seen from the scatter diagrams (Figures 5-1 and 5-2).

TABLE 5-1

MODE, MEDIAN, AND MEAN REASONABLE CHARGES BY SPECIALTY, 1971

Specialty	Reasonable Charge ($) Mode a/	Median	Mean
General Practice	14.50	32.40	59.20
General Surgery	24.50	60.70	122.34
Allergy	62.00	43.30	63.13
Otology, Laryngology, Rhinology	24.50	38.60	59.30
Anesthesiology	62.00	75.20	89.83
Cardiovascular Disease	62.00	70.20	82.94
Dermatology	24.50	50.60	54.74
Family Practice	24.50	21.10	46.08
Gynecology (Osteopaths only)	24.50	35.80	71.12
Gastroenterology	62.00	65.80	85.88
Internal Medicine	62.00	40.20	74.69
Manipulative Therapy(Osteopaths only)	24.50	34.70	NA
Neurology	62.00	70.70	76.66
Neurological Surgery	62.00	64.10	127.12
Obstetrics(Osteopaths only)	24.50	31.90	63.99
OB - Gynecology	24.50	34.00	87.65
Ophthalmology, Otology, Laryngology Rhinology (Osteopaths only)	24.50	35.00	80.09
Ophthalmology	24.50	37.20	102.75
Oral Surgery (Dentists only)	62.00	60.30	102.50
Orthopedic Surgery	24.50	70.90	124.31
Pathologic Anatomy, Clinical Pathology (Osteopaths only)	14.50	23.10	40.19
Pathology	14.50	22.30	39.65

TABLE 5-1 (continued)

MODE, MEDIAN, AND MEAN REASONABLE CHARGES BY SPECIALTY, 1971

Specialty	Reasonable Charge ($) Mode [a/]	Median	Mean
Peripheral Vascular Diseases or Surgery (Osteopaths only)	24.50	47.40	86.23
Plastic Surgery	62.00	81.30	150.48
Physical Medicine and Rehabilitation	24.50	48.10	NA
Psychiatry	24.50	70.60	108.23
Psychiatry, Neurology (Osteopaths only)	62.00	67.90	92.35
Proctology	24.50	39.00	77.30
Pulmonary Diseases	62.00	42.80	70.04
Radiology	14.50	27.30	44.18
Roentgenology, Radiology (Osteopaths only)	24.50	35.10	45.47
Radiation Therapy (Osteopaths only)	24.50	37.80	57.73
Thoracic Surgery	24.50	99.00	169.88
Urology	24.50	72.00	134.20
Podiatry - Surgical Chiropody	24.50	21.90	44.00
Miscellaneous	14.50	38.00	52.63
Clinic or other group practice, except GPPP [b/]	24.50	31.50	73.35
Unknown	14.50	40.10	77.39
Total	24.50	41.80	76.43

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a/ Midpoint of modal class interval

N.A. - not available

b/ Group practice prepayment

Source: Job 5261, Part V, "Physician Assignment Tabulation ASGN-5", HCFA

The criterion for eliminating outliers is that the locality prevailing lies beyond three standard deviations from the mean for all localities. In general, the scatters indicated that measures of central tendency adequately represent these distributions. At CUNY's request, HCFA reviewed the most extreme outliers for possible errors in reporting. Statistics used in our fee tabulations and regressions incorporate corrections based on the error list supplied to HCFA.

For the purposes of further analysis only the distribution within ±3 standard deviations from the mean was considered. The distributions with outliers deleted are shown in Tables 5-2 and 5-3.

Fee Measures

HCFA charge data for 50 selected procedures were available by locality with GPs and specialists separated. Both the 50th percentile of the customaries and the adjusted prevailing were available as measures of fees. Also used in the analysis were figures on SMI expenditures by county.

Actual fees for the calendar year are used as the basis for computing prevailing charges, which are the standard used in pricing submitted charges in a subsequent year in the Medicare reasonable charge process. While data on fees could be presented principally by locality, to examine the influence of discretionary administrative practices which are carrier-wide on fee levels, carrier-level measures are necessary. A fee measure using the entire set of Medicare physician services is developed by taking SMI expenditure and enrollee figures at the county level and aggregating to localities and then to carriers, the end product being SMI expenditure per enrollee for each carrier. If the entire set of Medicare procedures behaves like the selected 50, there should be convergence of the measure using SMI expenditure with a measure based on 50 selected procedures. 1/

1/ See also pp. 8-14 and 8-15.

Each of the fee measures has limitations. Fiftieth percentile or median fees do not reflect extreme values, i.e., peculiarities of a market that confer unusual advantages or disadvantages on certain subgroups of participants. However, the 50th percentile measures central tendency better than another percentile. Combining of GP and specialist fees simplifies inter-carrier comparison but loses carrier differences in GP/specialist ratios. Weighting by actual frequencies allows a variety of factors that could create differences in volume to influence measured prices. Such factors include availability of beds for surgery and in-hospital care of medical conditions, ease of transportation for revisits, and patients' ability to meet copayments. Combining all 50 procedures into any single measure may obscure differences in price behavior of the component procedures. Yet measures at the carrier level were needed in order to evaluate the effect of carrier discretionary practices on fees. For this purpose CUNY developed fee indices for each carrier based on fee data available.

The basic observation, the 50th percentile fee (the midpoint of the distribution of weighted customaries), is available at the locality level for each of 50 leading procedures performed under Medicare. Separate "50th" values exist for general practitioners and specialists unless the carrier does not form specialty groupings. These locality values were averaged to form a carrier mean, by procedure, keeping GP and specialist means separate. A national mean was also created for each procedure - once for GPs, and once for specialists - and the ratio of the carrier mean to the national mean could then be created. Also available from this set of observations, and useful for analysis, is the GP/specialist fee ratio by carrier for each procedure.

The ratios to the national values obtained for a carrier were used to derive a mean ratio for all the procedures on which it reports information. The value of this mean ratio, or fee index, is a generalized measure of deviation from the national average price level for Medicare. This carrier mean ratio was developed for GPs and specialists separately and for the pool of the GP and specialist fee ratios to the national means for each procedure, referred to as the combined ratio.

The repetition of all the above steps, modified by weighting the values by the frequency of performance of each procedure by GPs and by specialists separately in each locality created a weighted fee index.

A similar set of calculations was performed for adjusted prevailing fees, based on the 75th percentile of weighted customaries adjusted by the economic index and "no rollback" requirement.1/

Each fee measure has a different meaning. The weighted fee index is relevant to an ex post fee concept - the prices actually paid by Medicare and by patients, with prices occurring most often given most weight. In contrast, the unweighted 50th is an ex ante fee concept, indicating the set of signals - the range of practitioners' fees - that is presented to physicians and to patients before the next round of seller and buyer behavior occurs in the market.

1/ The computational formulas are shown in the Appendix to this chapter.

In this chapter we describe the variation in results of the fee measures and the effects of the economic index. The study of the relationship of fees to discretionary practices and other influences is described in Chapter 8.

Fiftieth Percentiles

The fee analysis concentrated on 50th percentile measures for FSY 1977. The results of the analysis by carrier and procedure, region, and type of doctor are reported below.

Carrier Analysis

For 69% of carriers, mean charges are lower than national mean charges. For ten carriers mean fees are very close to the national mean (between .95 and 1.04). Carrier 43 (Equitable, Tennessee) and carrier 60 (Mutual Life Insurance, Maine) have the lowest GP mean ratios (below .79); i.e., fees for these carriers are below average national fees. The highest GP mean ratio is observed for carrier 32 (Aetna, Alaska), and the (GP+SP) combined ratio is also highest for this carrier. This is reasonable as Alaska has a high per capita income, a high cost of living, and a low supply of doctors compared to the other parts of the country.

Both specialists' and GP+SP combined distributions are quite similar to the GP distribution. But carriers which have the lowest carrier ratio for GPs do not have the lowest ratio for SP, or for GP and SP combined. For the specialist group, carrier 18 (New Hampshire-Vermont Physicians Service), carrier 25 (Blue Shield of South Carolina) and carrier 60 (Union Mutual Life Insurance, Maine) have the lowest fees. Based on the spread from lowest to highest (ranks shown) for the combined ratio, there is no difference in fee variability among Blues, multi-state commercial organizations as a group, and one-area commercial organizations. GHI-New York is close to Blue Shield in the same geographic area, but

fees for GHI-Florida are much higher than those of any other Southern carrier's.

Ranks of carrier 50th percentile fee indices for GP, SP and combined indices are shown in Table 5-4. The first rank was assigned to the highest index. In general, the ranks are consistent for all three measures, indicating that the index expresses the carrier price level as compared to the national mean.

For the combined index the top five carriers are: Aetna, Alaska; Aetna, Nevada; Occidental Life, California; GHI, Florida; and Blue Cross/Blue Shield Greater New York. The lowest five are: Union Mutual Life Insurance, Maine; New Hampshire - Vermont Physicians Service; Equitable, Tennessee; Blue Shield, South Carolina; and Minnesota Medical Service.

Regional Analysis

Table 5-5 shows regional indices. Regions V (Chicago) and VII (Kansas City) have the lowest fee indices, although none of the carriers from these regions shows the lowest carrier ratio. The mean for Region IX (San Francisco) is much higher than the national mean. This is true for GP, SP, and the two groups combined. For all three distributions, most of the regions have a mean ratio value under one.

Analysis by Type of Doctor

In order to compare fees of GPs and specialists for the same procedure, information on the national distribution of locality figures showing, for 1977, the 50th percentile of the weighted customary charges by procedure is used. For each of 50 leading procedures, the means of such charges for GPs and specialists separately can be compared. The measure used is the ratio of the GP mean to the specialists' mean - for each procedure and for four procedure types - medical, surgical, radiology and laboratory.

The ratio varies from .7 for initial comprehensive office visit (#2) to 1.18 for hemoglobin test (#38) (Table 5-6). Of the 50 procedures, 37 have ratios between .9 and 1.1 (Table 5-7). Among procedure types, medical procedures tend to have the lowest ratios (Table 5-8). The fact that GP fees for radiology and laboratory procedures are not lower but actually higher than those of specialists is interesting since these procedures are often considered specialty procedures by domain if not always by reason of skill. The excess for laboratory tests conforms with findings in the Schieber report (See Chapter 4).

As medical procedures (visits) can be performed by both specialists and non-specialists, there should be little difference between the two sets of prices; nevertheless, GP prices are lower. One can speculate that GPs sell services to a lower socioeconomic group, to price-conscious individuals in the same population as that served by specialists, or to other subsets, and charge less in order to stay in the market. But as GPs charge higher prices for laboratory and radiology services, they may make up for their lower visit fees without patient resistance.

Comparison of 50th Percentile to Adjusted Prevailing

The implications of applying the economic index to Medicare prevailing fees are important for Medicare because the 75th percentile may cease to be used as an upper bound. Arriving at the 75th through the reasonable charge process entails considerable cost as compared to use of the index. Determining 75th percentile charges in each Medicare year should therefore be viewed as only one option and not an integral part of a fee payment system. The index could be used to update fees determined by the RCP for the base year. The index as it is now used has its own limits in that it does not take regional differences in cost of living trends into account, nor does it allow for differences among specialties as to cost trends.

The extreme situation in which the application of the index pulls the upper bound for physician payment below the 50th percentile is studied in the following analysis.[1/] The differential impact of the index across localities, carriers, procedures, and specialist groupings is suggested by study of this extreme. As time goes on, if inflation continues the index has a progressively more restrictive effect on fees, as shown by the relative percents in FSYs 1976, 1977 and 1978 that are below the 50th percentile.

For this analysis, a "case" is a pair of fee measures - 50th percentile and adjusted prevailing - for a carrier locality for either general practitioners or specialists, for one of the 50 procedures reported by Medicare. Therefore, a locality would have a maximum of 100 cases if fees are reported for all 50 procedures for both GPs and specialists.

In the 1976 prevailing charge data there are 883 out of 25,411 cases (3.5%) where the 50th percentile is greater than the adjusted prevailing (Tables 5-9 and 5-12), which is the 75th percentile modified by the economic index (to be indicated from now on as occurrences of 50th > Pr). Out of these 388 are general practitioner fees and 495 are specialist fees. Findings at the locality and carrier level and by procedure are presented below.

At the locality level it was found that out of 255 localities 163 (63.9%) have at least one or more general practitioner fees in which 50th > Pr (Table 5-13). For specialists, 170 of 271 localities (62.7%) have 50th > Pr.

There are one or more occurrences where 50th > Pr for GP fees in 33 carriers and for specialist fees in 36 carriers (Table 5-13). Carrier 59 (Travelers - Virginia) has the highest number of occurrences: 127 out of 400 (67 specialist and 60 GP) whereas carrier 27 (Group Medical and Surgical Services, Texas) has the lowest: 128 out of 3,000 (66 GP and 62 specialist).

Incidence varies by procedure. For GPs, EEG (procedure 50 in the Medicare list) has 50th > Pr in 33 cases (8.5%), but for hemoglobin, complete blood count, cholesterol blood test, sedimentation rate and urinalysis there are no instances (Table 5-9). For specialist fees, insertion of pacemaker has 29 occurrences (5.9%), but seven procedures have none. For GP and specialist fees together, EEG has the most occurrences (47). Out of 50 procedures, 20 have more than 20 instances in which 50th > Pr exists for GP+SP fees.

In the 1977 prevailing charge data there are 2,622 out of 24,852 cases (10.6%) for GP and specialist fees in which 50th > Pr, 1,332 for GP fees and 1,290 for specialist fees (Table 5-12).

1/ The no-rollback provision prevents the index from reducing fees below their FSY 1975 level, thus limiting the effect of the Economic Index.

Out of 255 localities there are 211 (92.7%) where 50th> Pr for GP charges, and 185 out of 258 (71.7%) for specialist charges. For both GP and specialist, 53.8% of these localities have 16 or more occurrences.

About 69% of the carriers have 50th> Pr for GP charges and 61% have it for specialist charges (Table 5-14). About half of these carriers have 16 or more occurrences for both GP and specialist fees. The highest number of occurrences per carrier for GP fees is 470 for carrier 27 (Group Medical and Surgical Service, Texas). This carrier has 324 occurrences for specialists, and therefore, in all, 794 occurrences out of 2,244 cases (35.4%) where 50th> Pr. Including carrier 27, five carriers have more than 100 occurrences each.

Bronchoscopy has 70 occurrences for GPs and 61 for specialists (a total of 131). Reduction of fracture has a total of 113 occurrences (Table 5-10).

For 1978 prevailing charge data, there are 1,976 out of 11,019 (17.9%) cases for GPs where 50th> Pr and 2,420 out of 11,639 (20.8%) for specialists (Table 5-12).

At the locality level, 216 of 232 localities (93.1%) for GPs have fees in which 50th> Pr, and for specialists 221 of 245 (90.2%) have occurrences (Table 5-13). For both GP and specialist, most localities(72% and 74% respectively) have 16 or more occurrences.

There are one or more occurrences where 50th> Pr for GPs in 51 carriers and for specialists in 55 (Table 5-14). The number with 16 or more occurrences is 26 for GPs and 34 for specialists.

Reduction of fracture has 141 occurrences for specialists and routine office visit has 103 for GPs. For 1978, only one procedure (prothrombin, specialist) has no occurrences where 50th> Pr.

For 1978, 19.4% of the total number of cases have 50th> Pr, whereas for 1976 and 1977, the percents are 3.5 and 10.6 respectively. This difference could be due to implementation of the economic index, which brought the 1977 and the 1978 prevailing charges to a lower level than the median of the actual charge distribution (50th percentile), thus reducing the importance of the 75th percentile as a determinant of prevailing charges.

This analysis shows that the impact of the economic index has become more restrictive over the period 1976 to 1978. At the procedure level, surgical procedures have the greatest increase of occurrences for GP+SP, from 4.9% in 1976 to 27.3% in 1978 (Figure 5-3). Laboratory procedures had the smallest increase, from 1% in 1976 to only 3.2% in 1978. This might be attributed to the force of competition between MDs in private offices and independent laboratories, which would limit the impact of the economic

index. For all procedures, the increase was from 3.5% to 19.4%.

For initial limited office visit-new patient and routine follow-up-brief home visit, the number of occurrences in 1977 was four times the number in 1976, and the number in 1978 was six times that for 1976. For bronchoscopy, the 1978 figure for GPs was eight times the 1976 figure, but for specialists, five times the 1976 figure. Overall, however, the increase in occurrences for specialists is higher, from 3.8% in 1976 to 20.8% in 1978 versus 3.2% to 17.9% for GPs.

By carrier, the impact of the economic index varies among carriers in the same year, and for the same carrier in different years. For example, for carrier 59 (Travelers, Virginia), occurrences of 50th > Pr made up 32% of all cases in 1976 but 42% in 1977 and only 16% in 1978. Whereas in 1976, carrier 3 (California Physicians Service) had occurrences of 3%, this increased to 10% in 1977 and to 38% in 1978. Although some carriers did not have increases in occurrences for each year, overall, carriers had increases in occurrences from 60% in 1976 to 92.7% in 1978 for GPs and from 59% to 88.7% for specialists.

Summary

The 50th percentile fee measures under Medicare for FSY 1977 were examined by carrier, procedure, region, and type of doctor. While the 50th percentile does not take extreme values into account, it provides the best measure of central tendency of Medicare fees.

At the carrier level, analysis of 50th percentile fees reveals little if any fee variability among the different carrier types. Different carrier organizations in the same geographic area have similar fees. However, GHI-Florida has fees which are considerably higher than those of other carrier organizations in the South. While this might be attributed to GHI-Florida

being a new carrier in the area and thereby taking its pricing lead from GHI-New York, which ranks in the top ten for carrier 50th percentile fee indices, probably more important is the concentration of aged population in Florida, which represents a source of demand. Fees for GHI-Florida are even higher than for GHI-New York.

On average, GPs charge lower fees for medical procedures than do specialists, probably as a means of competing with specialists who are usually able to command higher fees because consumers value their training. However, GP fees for radiology and laboratory procedures are higher than specialist fees. The GPs may be using these fees to make up for their low fees for office visits.

The use of the economic index in determining adjusted prevailing fees has all but eliminated the 75th percentile as an upper bound of reasonable charges. The number of occurrences in which the 50th percentile exceeded the prevailing increased each year. Whether the analysis is at the level of the case, carrier, procedure, type of procedure, or type of doctor, overall, there is an increase in such occurrences over the years analyzed. If submitted charges continue to rise at a higher rate than the index, the trend of an ever-increasing number of occurrences will persist.

The 75th percentile is not only losing its function as an upper bound, but its computation - the reasonable charge process - is more costly than simply applying the economic index to prevailing fees.

Table 5-2

1977 50th Percentile Medicare Fees by Type of Doctor and Procedure - U.S.A., Outliers Deleted

	Procedure and 64 CRVS Code	General Practitioners					Specialists				
		Number of Localities	Maximum	Minimum	Mean	Standard Deviation	Number of Localities	Maximum	Minimum	Mean	Standard Deviation
1.	Initial Limited Office Visit (9000) New Patient	249	$20.00	$7.00	$13.22	3.05	241	$37.20	$3.00	$17.44	5.5
2.	Initial Comprehensive Office Visit (9002) New Patient	260	63.80	5.00	29.11	12.50	259	75.00	15.00	41.01	12.09
3.	Minimal Office Visit - Established Patient (9003)	193	12.00	1.00	5.30	2.23	200	13.00	1.00	5.76	2.48
4.	Routine Followup Brief Office Visit (9004) Established Patient	251	13.00	6.00	8.64	1.49	251	15.00	6.40	10.46	2.00
5.	Routine Followup Brief Home Visit (9014)	252	22.50	7.00	13.50	3.50	257	25.00	7.00	16.12	4.13
6.	Initial Brief Hospital Visit	235	42.00	6.00	25.28	6.90	235	50.00	10.00	30.21	8.25
7.	Initial Comprehensive Hospital Visit (9022)	243	63.80	6.00	36.92	11.01	243	80.00	22.00	46.54	11.42
8.	Routine Followup Brief Hospital Visit (9024)	255	15.00	5.00	9.69	2.34	254	20.00	5.00	11.57	3.09
9.	Biopsy Skin (0171)	246	35.00	9.60	20.15	5.35	256	50.00	10.00	26.33	8.73
10.	Radical Mastectomy (0470)	217	880.00	400.00	622.96	141.79	258	1000.00	400.00	615.76	143.49
11.	Reduction of Fracture - Neck of Femur (0368)	191	1100.00	200.00	726.62	208.70	209	1210.00	429.00	730.46	176.21
12.	Arthrotomy - Puncture for Aspiration of Joint Effusion (1046)	249	25.00	4.00	13.98	3.79	234	30.00	5.00	15.97	4.45
13.	Needle Puncture of Bursa (1413)	236	25.00	4.40	14.41	3.95	241	30.00	5.00	15.64	4.30
14.	Bronchoscopy (2111)	203	225.00	95.00	146.69	22.19	258	200.00	75.00	139.91	27.56
15.	Thoracentesis (2183)	248	50.00	10.00	26.61	6.32	259	70.00	12.00	35.04	10.24

Table 5-2 (continued)

1977 50th Percentile Medicare Fees by Type of Doctor and Procedure - U.S.A., Outliers Deleted

	Procedure and 64 CRVS Code	General Practitioners					Specialists				
		Number of Localities	Maximum	Minimum	Mean	Standard Deviation	Number of Localities	Maximum	Minimum	Mean	Standard Deviation
16.	Catheterization of Heart (2330)	185	$500.00	$125.00	$282.52	101.43	200	$500.00	$63.80	$262.78	76.67
17.	Insertion of Pacemaker (2356)	164	900.00	200.00	610.16	204.05	213	960.00	70.00	687.66	226.56
18.	Blood Transfusion (2445)	180	25.00	3.50	14.11	3.79	189	35.00	3.50	14.08	4.33
19.	Colectomy (3179)	206	1000.00	450.00	676.77	129.59	245	1080.00	365.00	674.43	138.04
20.	Appendectomy (3261)	212	500.00	87.50	299.72	71.52	240	552.50	200.00	329.84	75.40
21.	Sigmoidoscopy (3310)	255	39.00	10.00	24.11	5.10	259	41.00	15.00	26.53	4.84
22.	Hemorrhoidectomy (3380)	215	400.00	150.00	269.99	58.43	238	450.00	150.00	274.78	57.39
23.	Cholecystectomy (3515)	230	725.00	300.00	471.73	99.53	263	800.00	300.00	501.00	108.76
24.	Repair Hernia (3631)	244	450.00	158.00	281.51	63.09	260	500.00	190.00	306.42	65.59
25.	Cystoscopy (3930)	210	80.00	20.00	43.59	12.04	230	82.50	10.00	44.56	12.03
26.	Dilation of Urethra (4031)	226	27.00	1.00	14.19	4.34	226	26.20	2.00	14.00	4.47
27.	Prostatectomy (4316)	206	700.00	400.00	574.44	99.39	231	1110.00	350.00	653.87	147.28
28.	Transurethral Electrosection of Prostrate (4321)	211	1020.80	250.00	648.10	133.61	236	1000.00	350.00	640.29	143.63
29.	Hysterectomy (4632)	223	828.00	350.00	562.96	129.15	242	950.00	300.00	595.27	126.29
30.	Extraction of Lens (5611)	204	900.00	350.00	594.55	109.28	240	1000.00	350.00	599.09	135.92
31.	Chest X-ray (7100)	252	22.00	8.00	15.29	2.74	238	26.25	5.00	14.82	4.79
32.	X-ray Spine (7210)	248	40.00	8.75	24.78	5.06	233	52.00	7.50	25.32	7.51
33.	X-ray Hip (7300)	245	36.00	7.50	21.60	5.07	236	36.00	5.00	20.76	6.61
34.	X-ray Stomach (7356)	228	71.50	19.10	43.73	8.97	235	84.20	11.00	43.07	13.93
35.	X-ray Colon (7360)	242	65.00	20.00	41.27	8.43	234	75.00	14.00	40.99	11.46

Table 5-2 (continued)

1977 50th Percentile Medicare Fees by Type of Doctor and Procedure - U.S.A., Outliers Deleted

Procedure and 64 CRVS Code	General Practitioners					Specialists				
	Number of Localities	Maximum	Minimum	Mean	Standard Deviation	Number of Localities	Maximum	Minimum	Mean	Standard Deviation
36. Cobalt (7603)	142	$30.00	$10.00	$19.12	5.85	202	$37.50	$5.00	$18.25	6.41
37. Radiotherapy - Supervoltages (7609)	126	35.00	10.00	22.55	7.98	182	37.00	8.00	22.76	8.17
38. Hemoglobin (8622)	258	6.50	1.00	3.27	1.32	252	4.70	1.00	2.76	0.63
39. Blood, White Cell Count (8642)	257	5.00	1.00	3.14	0.78	255	5.00	1.00	2.91	0.78
40. Complete Blood Count (8628)	255	12.00	3.00	7.24	1.52	253	11.00	5.00	7.37	1.21
41. Cholesterol Blood Test (8712)	255	10.00	4.00	6.20	1.19	253	10.00	3.00	6.18	1.19
42. Hematocrit (8681)	256	6.00	1.00	2.95	0.76	256	5.00	1.00	2.83	0.76
43. Prothrombin Time Test (8712)	254	9.00	3.00	5.48	1.06	254	8.00	2.00	5.21	1.12
44. Sedimentation Rate (8718)	256	7.50	2.00	4.35	1.08	256	7.00	2.00	4.09	0.98
45. Blood Sugar (8722)	254	9.00	3.25	5.82	1.09	254	8.50	3.00	5.76	1.00
46. BUN - Urea Nitrogen (8745)	254	10.00	3.00	6.10	1.24	251	9.00	3.00	5.95	1.04
47. Pap Test (8911)	253	15.00	2.00	8.22	2.36	252	12.00	2.50	7.50	1.76
48. Urinalysis (8986)	255	6.00	2.00	3.50	0.91	257	6.00	2.00	3.83	0.81
49. EKG (Electrocardiogram) (9101)	256	25.50	10.00	18.69	3.31	259	28.00	10.00	19.02	3.32
50. EEG (Electroencephalogram) (9330)	216	76.60	10.00	48.15	12.80	221	76.60	13.00	48.41	12.65

Source: 50th Percentile Descriptive Statistics Printout, 18 July 1978, DUDGC088

Table 5-3

1977 Prevailing Charge By Type of Doctor and Procedure - U.S.A., Outliers Deleted

	Procedure and 64 CRVS Code	General Practitioners					Specialists				
		Number of Cases	Maximum	Minimum	Mean	Standard Deviation	Number of Cases	Maximum	Minimum	Mean	Standard Deviation
1.	Initial Limited Office Visit (9000) New Patient	241	$25.50	$7.00	$14.79	3.93	240	$40.00	$9.00	$19.60	6.47
2.	Initial Comprehensive Office Visit (9002) New Patient	260	63.80	6.40	33.77	13.42	259	75.00	15.00	44.71	12.25
3.	Minimal Office Visit - Established Patient (9003)	194	12.80	2.00	5.90	2.28	201	15.00	2.00	6.60	2.65
4.	Routine Followup Brief Office Visit (9004) Established Patient	251	14.00	6.00	8.89	1.73	249	16.00	6.40	10.87	2.15
5.	Routine Followup Brief Home Visit (9014)	260	25.50	7.50	14.96	3.78	259	30.00	8.00	17.24	4.36
6.	Initial Brief Hospital Visit	237	44.70	8.93	26.82	7.35	236	50.00	8.93	33.03	8.81
7.	Initial Comprehensive Hospital Visit (9022)	244	70.00	19.10	40.69	12.09	243	75.00	24.00	49.30	11.31
8.	Routine Followup Brief Hospital Visit (9024)	254	17.00	5.00	10.29	2.39	254	21.90	5.00	12.17	3.06
9.	Biopsy Skin (0171)	244	40.00	9.60	22.87	6.34	255	60.00	12.00	29.06	10.24
10.	Radical Mastectomy (0470)	217	900.00	250.00	617.73	120.79	257	1084.60	408.00	634.21	140.99
11.	Reduction of Fracture - Neck of Femur (0168)	192	1200.00	382.80	734.79	229.05	211	1340.80	450.00	748.43	201.71
12.	Arthrotomy - Puncture for Aspiration of Joint Effusion (1046)	243	27.50	5.00	15.75	3.88	233	31.90	5.00	17.81	4.71
13.	Needle Puncture of Bursa (1413)	236	30.00	6.00	16.53	4.44	241	31.90	8.00	17.54	5.25
14.	Bronchoscopy (2111)	207	192.00	94.40	144.28	23.15	258	216.90	95.70	141.45	26.87
15.	Thoracentesis (2183)	246	56.25	12.80	29.74	7.25	260	76.60	20.00	38.42	11.05

Table 5-3 (continued)

1977 Prevailing Charge By Type of Doctor and Procedure - U.S.A.; Outliers Deleted

	Procedure and 64 CRVS Code	General Practitioners					Specialists				
		Number of Cases	Maximum	Minimum	Mean	Standard Deviation	Number of Cases	Maximum	Minimum	Mean	Standard Deviation
16.	Catherization of Heart (2330)	185	$550.00	$146.00	$323.99	79.99	199	525.00	$ 63.80	$277.39	78.67
17.	Insertion of Pacemaker (2356)	163	950.00	200.00	635.56	208.28	213	1000.00	165.00	725.90	198.24
18.	Blood Transfusion (2445)	182	33.20	3.50	15.13	5.12	193	40.80	3.50	16.22	7.19
19.	Colectomy (3179)	209	1020.80	400.00	701.41	124.65	247	1212.20	400.00	707.48	154.33
20.	Apperdectomy (3261)	210	475.00	175.00	308.52	63.89	243	561.40	200.00	340.76	72.64
21.	Sigmoidoscopy (3310)	255	40.00	15.00	25.70	4.82	260	44.70	19.10	28.31	5.48
22.	Hemorrhoidectomy (3380)	215	400.00	150.00	284.86	49.73	242	478.50	175.00	285.75	61.79
23.	Cholecystectomy (3515)	236	780.00	275.10	493.03	106.16	262	893.20	300.00	518.27	115.61
24.	Repair Hernia (3631)	244	491.30	175.00	293.23	65.13	261	550.00	225.00	320.63	70.97
25.	Cystoscopy (3930)	209	80.00	25.00	47.23	10.54	230	80.00	25.00	48.35	11.97
26.	Dilation of Urethra (4031)	229	30.00	7.00	16.78	4.44	228	31.20	4.00	15.95	5.23
27.	Prostatectomy (4316)	207	1000.00	382.80	622.97	154.82	231	1100.00	382.80	674.22	152.73
28.	Transurethral Electrosection of Prostate (4321)	213	1020.80	200.00	661.20	164.58	238	1100.00	350.00	658.03	159.76
29.	Hysterectomy (4602)	223	900.00	328.80	602.22	137.55	245	1000.00	400.00	623.57	129.33
30.	Extraction of Lens (5611)	204	900.00	375.00	616.80	108.73	237	1000.00	375.00	611.55	136.85
31.	Chest X-ray (7100)	257	25.00	8.00	16.46	2.98	238	30.00	5.00	15.60	4.94
32.	X-ray Spine (7210)	251	45.00	15.00	26.80	6.44	233	45.50	7.50	27.89	8.63
33.	X-ray Hip (7300)	245	39.00	12.00	23.27	5.57	238	38.30	5.00	22.91	7.07
34.	X-ray Stomach (7356)	227	75.00	19.10	45.62	10.01	236	90.00	15.00	45.38	14.77
35.	X-ray Colon (7360)	240	62.00	22.30	42.80	8.56	233	75.00	15.00	42.31	11.91

Table 5-3 (continued)

1977 Prevailing Charge By Type of Doctor and Procedure - U.S.A., Outliers Deleted

	Procedure and 64 CRVS Code	General Practitioners					Specialists				
		Number of Cases	Maximum	Minimum	Mean	Standard Deviation	Number of Cases	Maximum	Minimum	Mean	Standard Deviation
36.	Cobalt (7603)	142	$30.00	$12.50	$20.17	5.12	201	$38.30	$ 7.00	$19.82	6.98
37.	Radiotherapy - Supervoltages (7609)	126	36.00	13.60	23.57	7.67	182	35.00	8.00	23.89	8.04
38.	Hemoglobin (8622)	258	6.50	1.00	3.78	1.28	256	5.20	1.00	3.25	0.76
39.	Blood, white cell count (8642)	257	6.00	1.00	3.53	0.82	256	5.00	1.00	3.11	0.79
40.	Complete Blood Count (8628)	254	12.00	5.00	8.11	1.55	255	12.25	5.00	8.12	1.30
41.	Cholesterol Blood Test (8712)	254	10.00	4.00	6.78	1.22	255	10.00	5.00	6.68	1.12
42.	Hematocrit (8681)	256	5.00	1.00	3.37	0.81	258	5.20	1.80	3.28	0.80
43.	Prothrombin Time Test (8712)	258	10.00	4.00	6.17	1.33	254	9.40	3.00	5.68	1.18
44.	Sedimentation Rate (8718)	258	8.00	2.00	4.92	1.06	258	7.30	2.00	4.58	1.01
45.	Blood Sugar (8722)	257	10.00	4.00	6.51	1.33	258	10.00	3.50	6.53	1.22
46.	BUN - Urea Nitrogen (8745)	257	10.00	4.00	6.56	1.35	257	10.00	3.50	6.60	1.18
47.	Pap Test (8911)	258	16.00	5.00	9.73	2.53	256	13.75	4.00	8.58	1.82
48.	Urinalysis (8986)	258	7.00	2.00	4.10	1.03	259	7.00	2.50	4.40	0.96
49.	EKG (Electrocardiogram) (9101)	257	30.00	15.00	20.28	3.50	259	29.50	14.50	20.20	3.37
50.	EEG (Electroencephalogram) (9330)	215	76.60	15.00	48.83	11.53	221	80.00	15.00	50.50	12.38

Source: Prevailing Charge Descriptive Statistics Printout, 13 July 1978, DUDGC082

10/26/77

Table 5-4

Carrier Ranks On 50th Percentile Fee Index For Fifty Selected Procedures, By Type Of Doctor, 1977

Carrier Code Number	Carrier Organization		Ranks		
			GP	SP	Combined
01	Blue Shield	Blue Cross, Blue Shield of Alabama	42	47	47
02	" "	Arkansas Blue Cross/ Blue Shield	39	44	44
03	" "	California Physicians Service	5	7	6
04	" "	Colorado Physicians Service	49	55	55
05	" "	Delaware Blue Cross/Blue Shield	21	24	24
06	" "	Medical Service of Washington, D.C. a)	8	10	10
07	" "	Blue Shield, Florida	---	16	16
08	" "	Illinois Medical Service	10	12	12
09	" "	Mutual Medical Service, Indiana	40	45	45
10	" "	Iowa Medical Service	41	46	46
11	" "	Blue Shield of Kansas City, Missouri	30	33	33
12	" "	Kansas Physicians Service	---	42	42

Table 5-4 (continued)

Carrier Ranks On 50th Percentile Fee Index For Fifty Selected Procedures By Type Of Doctor, 1977

Carrier Code Number	Carrier Organization	Carrier Name	Ranks GP	Ranks SP	Ranks Combined
13	Blue Shield	Maryland Blue Shield	47	53	53
14	" "	Massachusetts Blue Shield	25	28	28
15	" "	Minnesota Medical Service	50	57	57
16	" "	Michigan Medical Service	24	27	27
17	" "	Montana Physicians Service	35	39	39
18	" "	New Hampshire-Vermont Physicians Service [b/]	53	60	60
19	" "	Genesee Valley Medical Service, New York	---	52	52
20	" "	Blue Cross/Blue Shield - Greater New York	4	5	5
21	" "	Blue Shield of Western New York	---	9	9
22	" "	North Dakota Physicians Service	---	34	34
23	" "	Pennsylvania Blue Shield	29	32	32
24	" "	Rhode Island Physicians Service	20	23	23
25	" "	Blue Shield of South Carolina	51	58	58

Table 5-4 (continued)

Carrier Ranks On 50th Percentile Fee Index For Fifty Selected Procedures By Type of Doctor, 1977

Carrier Code Number	Carrier Organization	Carrier Name	Ranks GP	Ranks SP	Ranks Combined
26	Blue Shield	South Dakota Medical Service	----	56	56
27	" "	Group Medical and Surgical Service, Texas	9	11	11
28	" "	Utah Blue Shield	14	17	17
29	" "	Washington Physicians Service	19	22	22
30	" "	Surgical Care, Milwaukee, Wisconsin	17	20	20
31	" "	Wisconsin Physician Service	44	49	49
32	Aetna	Aetna, Alaska	1	1	1
33	"	Aetna, Arizona	12	14	14
34	"	Aetna, Hawaii	7	8	8
35	"	Aetna, Nevada	2	2	2
36	"	Aetna, Oklahoma	32	36	36
37	"	Aetna, Oregon	22	25	25
38	Private for one area	Connecticut General	16	19	19
39	" " " "	Continental Casualty Illinois	46	51	51
40	" " " "	Department of Public Welfare, Oklahoma	32	36	36

Table 5-4 (continued)

Carrier Ranks On 50th Percentile Fee Index For Fifty Selected Procedures By Type Of Doctor, 1977

Carrier Code Number	Carrier Organization	Carrier Name	Ranks		
			GP	SP	Combined
41	Equitable	Equitable, Idaho	34	38	38
42	"	Equitable, New Mexico	23	26	26
43	"	Equitable, Tennessee	52	59	59
44	"	Equitable, Wyoming	31	35	35
45	Private for one area	General American Life, Missouri	43	48	48
46	Group Health Incorporated	Group Health Incorporated, New York	6	6	7
47	Metropolitan	Metropolitan Life Insurance, Kentucky	48	54	54
48	Metropolitan	Metropolitan Life Insurance, New York	27	30	30
49	Private for one area	Mutual of Omaha-Nebraska	36	40	40
50	Nationwide	Nationwide Mutual Insurance, Ohio [b/]	37	41	41
51	"	Nationwide Mutual Insurance, West Virginia [b/]	38	43	43
52	Private for one area	Occidental Life, California	3	3	3
53	" " " "	Pan American Life Insurance, Louisiana	28	31	31

Table 5-4 (continued)

Carrier Ranks On 50th Percentile Fee Index For Fifty Selected Procedures By Type Of Doctor, 1977

Carrier Code Number	Carrier Organization	Carrier Name	Ranks GP	Ranks SP	Ranks Combined
54	Prudential	Prudential, Georgia	18	21	21
55	"	Prudential, New Jersey	13	15	15
56	"	Prudential, North Carolina	45	50	50
57	Travelers	Travelers, Minnesota	11	13	13
58	"	Travelers, Mississippi	26	29	29
59	"	Travelers, Virginia	15	18	18
60	Private for one area	Union Mutual Life Insurance, Maine	54	61	61
61	Group Health Incorporated	Group Health Incorporated, Florida	--	4	4
62	SSS de Puerto Rico	Puerto Rico	--	--	--

a/ Interstate carriers
b/ Same administration for West Virginia and Ohio

Note: The fee index is the mean of the ratios of carrier 50th percentile fees to the national mean of 50th percentile fees for fifty leading procedures. Each procedure ratio is derived by averaging fees of localities at carrier and national levels.

Source: Statistics for F50 Carrier Ratio Printout, 18 July 1978, DUDGC093.

Table 5-5

FY 1977 Statistics for the F50-Ratio
(Region Mean over National Mean) for Each Region, Outliers Deleted

Region	Number	Maximum	Minimum	Regular Mean	Standard Deviation
1	88	1.33282	0.666128	0.91200	0.133356
2	100	1.70335	0.590287	1.07363	0.205662
3	100	1.15759	0.712810	0.93002	0.083199
4	100	1.21111	0.672035	0.90209	0.088845
5	100	1.15772	0.655972	0.88075	0.077571
6	100	1.46625	0.696535	0.99054	0.117237
7	100	1.31382	0.562796	0.88371	0.108745
8	100	1.21489	0.495985	0.89880	0.131920
9	100	1.58982	0.968818	1.20592	0.099589
10	100	1.36363	0.716666	1.00274	0.104350

Selected Procedure Ratios of National Mean GP 50th Percentile Charge to National Mean Specialist 50th Percentile Charge, by Procedure, 1977, Outliers Deleted

Procedure	Ratio	Procedure	Ratio
1	.75	26	1.01
2	.71	27	.88
3	.92	28	1.01
4	.83	29	.95
5	.84	30	.99
6	.84	31	1.03
7	.79	32	.98
8	.84	33	1.04
9	.77	34	1.02
10	1.01	35	1.01
11	.99	36	1.05
12	.88	37	.99
13	.92	38	1.18
14	1.05	39	1.08
15	.76	40	.98
16	1.08	41	1.00
17	.89	42	1.05
18	1.00	43	1.05
19	1.00	44	1.06
20	.91	45	1.01
21	.91	46	1.03
22	.98	47	1.10
23	.94	48	.91
24	.91	49	.98
25	.98	50	.99

Source: Descriptive Statistics for 50th Percentile Printout, 18 July 1978, DUDGC088

Table 5-7

Frequency Distribution of Selected Procedure Ratios of National Mean GP 50th Percentile Charge to National Mean Specialist 50th Percentile Charge, 1977

Interval		Frequency
.70 - .79	=	5
.80 - .89	=	7
.90 - .99	=	17
1.00 - 1.10	=	20
1.11 and over	=	1
		50

Around 1 (.98 - 1.02) = 18

Source: Table 5-6

Table 5-8

Ratio of GP 50th Percentile Charges to Specialist 50th Percentile Charges, 1977, by Procedure Type*

Procedure Type	Ratio
Medical	.79
Surgical	.96
Radiology	1.01
Laboratory	1.01

* Ratio of procedure types computed as an average of ratios for procedures within each of four types.

Source - Table 5-6

Table 5-9

Number of Cases* In Which The 50th Percentile Charge Exceeds Adjusted Prevailing, 1976

	Procedure and 64 CRVS Code	GP	SP	Total GP + SP
1.	Initial Limited Office Visit (9000) New Patient	3	9	12
2.	Initial Comprehensive Office Visit (9002) New Patient	10	4	14
3.	Minimal Office Visit - Established Patient (9003)	6	7	13
4.	Routine Followup Brief Office Visit (9004) Established Patient	15	18	33
5.	Routine Followup Brief Home Visit (9014)	9	5	14
6.	Initial Brief Hospital Visit (9020)	7	9	16
7.	Initial Comprehensive Hospital Visit (9022)	10	14	24
8.	Routine Followup Brief Hospital Visit (9024)	4	20	24
9.	Biopsy Skin (0171)	11	14	25
10.	Radical Mastectomy (0470)	6	17	23
11.	Reduction of Fracture - Neck of Femur (0868)	12	20	32
12.	Arthrotomy - Puncture for Aspiration of joint effusion (1046)	4	9	13
13.	Needle puncture of bursa (1413)	4	5	9
14.	Bronchoscopy (2111)	8	24	32
15.	Thoracentesis (2183)	8	15	23
16.	Catheterization of Heart (2330)	4	6	10
17.	Insertion of pacemaker (2356)	8	29	37
18.	Blood Transfusion (2445)	8	4	12

Table 5-9
(continued)

Number Of Cases* In Which The 50th Percentile Charge Exceeds Adjusted Prevailing, 1976

Procedure and 64 CRVS Code	GP	SP	Total GP + SP
19. Colectomy (3179)	11	11	22
20. Appendectomy (3261)	18	13	31
21. Sigmoidoscopy (3310)	11	9	20
22. Hemorrhoidectomy (3380)	3	14	17
23. Cholecystectomy (3515)	19	17	36
24. Repair Hernia (3631)	26	17	43
25. Cystoscopy (3930)	8	14	22
26. Dilation of Urethra (4031)	12	14	26
27. Prostatectomy (4316)	1	16	17
28. Transurethral Electrosection of Prostrate (4321)	10	22	32
29. Hysterectomy (4632)	17	19	36
30. Extraction of Lens (5611)	4	9	13
31. Chest X-ray (7100)	7	7	14
32. X-ray Spine (7210)	9	5	14
33. X-ray Hip (7300)	8	9	17
34. X-ray Stomach (7356)	11	19	30
35. X-ray Colon (7360)	14	8	22
36. Cobalt (7603)	8	9	17
37. Radiotherapy - Supervoltages (7609)	7	8	15
38. Hemoglobin (8622)	-	-	-
39. Blood, white cell count (8624)	2	-	2

Table 5-9
(continued)

Number Of Cases* In Which The 50th Percentile Charge Exceeds Adjusted Prevailing, 1976

Procedure and 64 CRVS Code	GP	SP	Total GP + SP
40. Complete Blood Count (8628)	-	2	2
41. Cholesterol Blood Test (8652)	-	-	-
42. Hematocrit (8681)	1	1	2
43. Prothrombin Time Test (8712)	1	1	2
44. Sedimentation Rate (8718)	-	-	-
45. Blood Sugar (8722)	1	-	1
46. BUN - Urea nitrogen (8745)	3	2	5
47. Pap Test (8911)	2	-	2
48. Urinalysis (8986)	-	-	-
49. EKG (Electrocardiogram) (9101)	4	6	10
50. EEG (Electroencephalogram) (9330)	33	14	47
Total	388	495	883

* A case is a locality x procedure observation other than "0" fee or frequency.

Source: 1976 Fee printout, PIPGC 327, 2 December 1978.

Table 5-10

Number of Cases* In Which The 50th Percentile Charge Exceeds Adjusted Prevailing, 1977

	Procedure and 64 CRVS Code	GP	SP	Total GP + SP
1.	Initial Limited Office Visit (9000) New Patient	16	26	42
2.	Initial Comprehensive Office Visit (9002) New Patient	19	35	54
3.	Minimal Office Visit - Established Patient (9003)	19	13	32
4.	Routine Followup Brief Office Visit (9004) Established Patient	65	35	100
5.	Routine Followup Brief Home Visit (9014)	32	32	64
6.	Initial Brief Hospital Visit (9020)	44	31	75
7.	Initial Comprehensive Hospital Visit (9022)	29	38	67
8.	Routine Followup Brief Hospital Visit (9024)	32	37	69
9.	Biopsy Skin (0171)	14	34	48
10.	Radical Mastectomy (0470)	62	40	102
11.	Reduction of Fracture - Neck of Femur (0868)	57	56	113
12.	Arthrotomy - Puncture for Aspiration of joint effusion (1046)	19	21	40
13.	Needle puncture of bursa (1413)	18	33	51
14.	Bronchoscopy (2111)	70	61	131
15.	Thoracentesis (2183)	34	42	76
16.	Catheterization of Heart (2330)	32	21	53
17.	Insertion of pacemaker (2356)	38	46	84
18.	Blood Transfusion (2445)	12	16	28

Table 5-10
(continued)

Number Of Cases* In Which The 50th Percentile Charge Exceeds Adjusted Prevailing , 1977

Procedure and 64 CRVS Code	GP	SP	Total GP + SP
19. Colectomy (3179)	52	35	87
20. Appendectomy (3261)	40	48	88
21. Sigmoidoscopy (3310)	39	29	68
22. Hemorrhoidectomy (3380)	43	52	95
23. Cholecystectomy (3515)	57	39	96
24. Repair Hernia (3631)	39	45	84
25. Cystoscopy (3930)	33	19	52
26. Dilation of Urethra (4031)	25	21	46
27. Prostatectomy (4316)	17	36	53
28. Transurethral Electrosection of Prostrate (4321)	47	48	95
29. Hysterectomy (4632)	25	38	63
30. Extraction of Lens (5611)	10	30	40
31. Chest X-ray (7100)	21	26	47
32. X-ray Spine (7210)	44	17	61
33. X-ray Hip (7300)	28	15	43
34. X-ray Stomach (7356)	44	27	71
35. X-ray Colon (7360)	20	33	53
36. Cobalt (7603)	6	12	18
37. Radiotherapy - Supervoltages (7609)	9	31	40
38. Hemoglobin (8622)	4	4	8
39. Blood, white cell count (8624)	3	1	4

Table 5-10
(continued)

Number Of Cases* In Which The 50th Percentile Charge Exceeds Adjusted Prevailing, 1977

Procedure and 64 CRVS Code	GP	SP	Total GP + SP
40. Complete Blood Count (8628)	3	4	7
41. Cholesterol Blood Test (8652)	1	1	2
42. Hematocrit (8681)	4	-	4
43. Prothrombin Time Test (8712)	3	1	4
44. Sedimentation Rate (8718)	2	1	3
45. Blood Sugar (8722)	3	2	5
46. BUN - Urea nitrogen (8745)	6	5	11
47. Pap Test (8911)	7	4	11
48. Urinalysis (8986)	5	5	10
49. EKG (Electrocardiogram) (9101)	28	28	56
50. EEG (Electroencephalogram) (9330)	52	16	68
Total	1332	1290	2622

* A case is a locality x procedure observation other than "0" fee or frequency.

Source: 1977 Fee printout, PIPGC 339, 4 December 1978.

Table 5-11

Number of Cases* In Which The 50th Percentile Charge Exceeds Adjusted Prevailing, 1978

	Procedure and 64 CRVS Code	GP	SP	Total GP + SP
1.	Initial Limited Office Visit (9000) New Patient	28	40	68
2.	Initial Comprehensive Office Visit (9002) New Patient	26	65	91
3.	Minimal Office Visit - Established Patient (9003)	25	35	60
4.	Routine Followup Brief Office Visit (9004) Established Patient	103	90	193
5.	Routine Followup Brief Home Visit (9014)	40	42	82
6.	Initial Brief Hospital Visit (9020)	62	65	127
7.	Initial Comprehensive Hospital Visit (9022)	54	79	133
8.	Routine Followup Brief Hospital Visit (9024)	78	72	150
9.	Biopsy Skin (0171)	45	47	92
10.	Radical Mastectomy (0470)	70	66	136
11.	Reduction of Fracture - Neck of Femur (0868)	64	141	205
12.	Arthrotomy - Puncture for Aspiration of joint effusion (1046)	33	25	58
13.	Needle puncture of bursa (1413)	46	56	102
14.	Bronchoscopy (2111)	62	122	184
15.	Thoracentesis (2183)	82	71	153
16.	Catheterization of Heart (2330)	19	32	51
17.	Insertion of pacemaker (2356)	25	25	50
18.	Blood Transfusion (2445)	21	13	34

Table 5-11
(continued)

Number Of Cases* In Which The 50th Percentile Charge Exceeds Adjusted Prevailing, 1978

	Procedure and 64 CRVS Code	GP	SP	Total GP + SP
19.	Colectomy (3179)	56	86	142
20.	Appendectomy (3261)	65	83	148
21.	Sigmoidoscopy (3310)	45	77	122
22.	Hemorrhoidectomy (3380)	71	94	165
23.	Cholecystectomy (3515)	58	75	133
24.	Repair Hernia (3631)	69	85	154
25.	Cystoscopy (3930)	59	66	125
26.	Dilation of Urethra (4031)	47	35	82
27.	Prostatectomy (4316)	32	98	130
28.	Transurethral Electrosection of Prostate (4321)	44	120	164
29.	Hysterectomy (4632)	63	75	138
30.	Extraction of Lens (5611)	48	90	138
31.	Chest X-ray (7100)	36	54	90
32.	X-ray Spine (7210)	54	26	80
33.	X-ray Hip (7300)	33	47	80
34.	X-ray Stomach (7356)	53	49	102
35.	X-ray Colon (7360)	41	57	98
36.	Cobalt (7603)	38	48	86
37.	Radiotherapy - Supervoltages (7609)	71	69	140
38.	Hemoglobin (8622)	1	-	1
39.	Blood, white cell count (8624)	3	2	5

Table 5-11
(continued)

Number of Cases* In Which The 50th Percentile Charge Exceeds Adjusted Prevailing, 1978

40.	Complete Blood Count (8628)	5	2	7
41.	Cholesterol Blood Test (8652)	1	1	2
42.	Hematocrit (8681)	2	1	3
43.	Prothrombin Time Test (8712)	1	-	1
44.	Sedimentation Rate (8718)	3	2	5
45.	Blood Sugar (8722)	3	3	6
46.	BUN - Urea nitrogen (8745)	3	4	7
47.	Pap Test (8911)	4	4	8
48.	Urinalysis (8986)	1	-	1
49.	EKG (Electrocardiogram) (9101)	14	13	27
50.	EEG (Electroencephalogram) (9330)	69	40	109
	All 50 procedures	1976	2492	4468

* A case is a locality x procedure observation other than "0" fee or frequency.

Source: 1978 Fee printout, PIPGC328, 4 December 1978.

TABLE 5-12

Cases* in Which 50th Percentile Charge Exceeds Adjusted Prevailing, by Type of Procedure: 1976, 1977, 1978

1976

Type of Procedure	GP Total Cases	GP Number Greater 50th > Pr	GP Percent Greater 50th > Pr	SP Total	SP Number Greater 50th > Pr	SP Percent Greater 50th > Pr	GP+SP Total	GP+SP Number Greater 50th > Pr	GP+SP Percent Greater 50th > Pr
Medical	2,105	64	3.0%	2,126	86	4.0%	4,231	150	3.5%
Surgical	5,022	213	4.2	5,738	318	5.5	10,760	531	4.9
Radiology	1,634	64	3.9	1,725	65	3.8	3,359	129	3.8
Laboratory	3,521	47	1.3	3,540	26	0.7	7,061	73	1.0
Total	12,282	388	3.2	13,129	495	3.8	25,411	883	3.5

1977

Type of Procedure	GP Total Cases	GP Number Greater 50th > Pr	GP Percent Greater 50th > Pr	SP Total	SP Number Greater 50th > Pr	SP Percent Greater 50th > Pr	GP+SP Total	GP+SP Number Greater 50th > Pr	GP+SP Percent Greater 50th > Pr
Medical	1,994	256	12.8%	2,006	247	12.3%	4,000	503	12.6%
Surgical	5,335	783	14.7	5,542	810	14.6	10,877	1,593	14.6
Radiology	1,628	172	10.6	1,642	161	9.8	3,270	333	10.2
Laboratory	3,358	121	3.6	3,347	72	2.2	6,705	193	2.9
Total	12,315	1,332	10.8	12,537	1,290	10.3	24,852	2,622	10.6

1978

Type of Procedure	GP Total Cases	GP Number Greater 50th > Pr	GP Percent Greater 50th > Pr	SP Total	SP Number Greater 50th > Pr	SP Percent Greater 50th > Pr	GP+SP Total	GP+SP Number Greater 50th > Pr	GP+SP Percent Greater 50th > Pr
Medical	1,944	416	21.4%	1,947	416	21.4%	3,891	832	21.4%
Surgical	4,660	1,124	24.1	5,239	1,582	30.2	9,899	2,706	27.3
Radiology	1,542	326	21.1	1,592	350	22.0	3,134	676	21.6
Laboratory	2,873	110	3.8	2,861	72	2.5	5,734	182	3.2
Total	11,019	1,976	17.9	11,639	2,420	20.8	22,658	4,396	19.4

* Case is a locality x procedure observation other than "0" fee or frequencies.

Source: 1976, 1977, 1978 Fee printouts; PIPGC327, 2 December 1978; PIPGC 339, 4 December 1978; and PIPGC 328, 4 December 1978, respectively.

TABLE 5-13

Distribution of Localities by Number of Cases* in Which 50th Percentile Charge Exceeds Adjusted Prevailing Charge: 1976, 1977, 1978

Number of Cases	1976 Localities				1977 Localities				1978 Localities			
	GP		Specialist		GP		Specialist		GP		Specialist	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	255	100.0%	271	100.0%	255	100.0%	258	100.0%	232	100.0%	245	100.0%
1-5	72	28.2	63	23.2	48	18.8	22	8.5	7	3.0	12	4.9
6-10	16	6.3	23	8.5	7	2.7	17	6.6	19	8.2	12	4.9
11-15	10	3.9	16	5.9	19	7.5	7	2.7	23	9.9	15	6.1
16 and over	65	25.5	68	25.1	137	53.7	139	53.9	167	72.0	182	74.3
All 50th > Pr	163	63.9	170	62.7	211	82.7	185	71.7	216	93.1	221	90.2

* Case is a locality x procedure observation other than "0" fees or frequencies

Source: 1976, 1977, 1978 Fee Printouts; PIPGC 323, 4 December 1978; and PIPGC 326, 4 December 1978; and PIPGC 324, 4 December 1978, respectively.

TABLE 5-14

Distribution of Carriers by Number of Cases* in Which 50th Percentile Charge Exceeds Adjusted Prevailing Charge : 1976, 1977, 1978

Number of Cases	1976 Carriers				1977 Carriers				1978 Carriers			
	GP		Specialist		GP		Specialist		GP		Specialist	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	55	100.0%	61	100.0%	55	100.0%	62	100.0%	55	100.0%	62	100.0%
1-5	14	25.5	16	26.2	14	25.5	8	12.9	4	7.3	2	3.2
6-10	7	12.7	5	8.2	2	3.6	9	14.5	12	21.8	9	14.5
11-15	3	5.5	5	8.2	6	10.9	2	3.2	9	16.4	10	16.1
16 and over	9	16.4	10	16.4	16	29.1	19	30.6	26	47.3	34	54.8
All 50th > Pr	33	60.0	36	59.0	38	69.1	38	61.3	51	92.7	55	88.7

* Case is a locality x procedure observation other than "0" fee or frequencies.

Source: 1976, 1977, 1978 Fee printouts, PIPGC 323, 4 December 1978; PIPGC 326, 4 December 1978; and PIPGC 324, 4 December 1978, respectively.

Figure 5-1

SCATTER PLOTS FOR REVISED 1977 FEES - OUTLIERS INCLUDED 17:13 FRIDAY, OCTOBER 27, 1978

PROCEDURE=3 TYPEDOC=1

PLOT OF CARRIER*F50 LEGEND: A = 1 OBS , B = 2 OBS , ETC

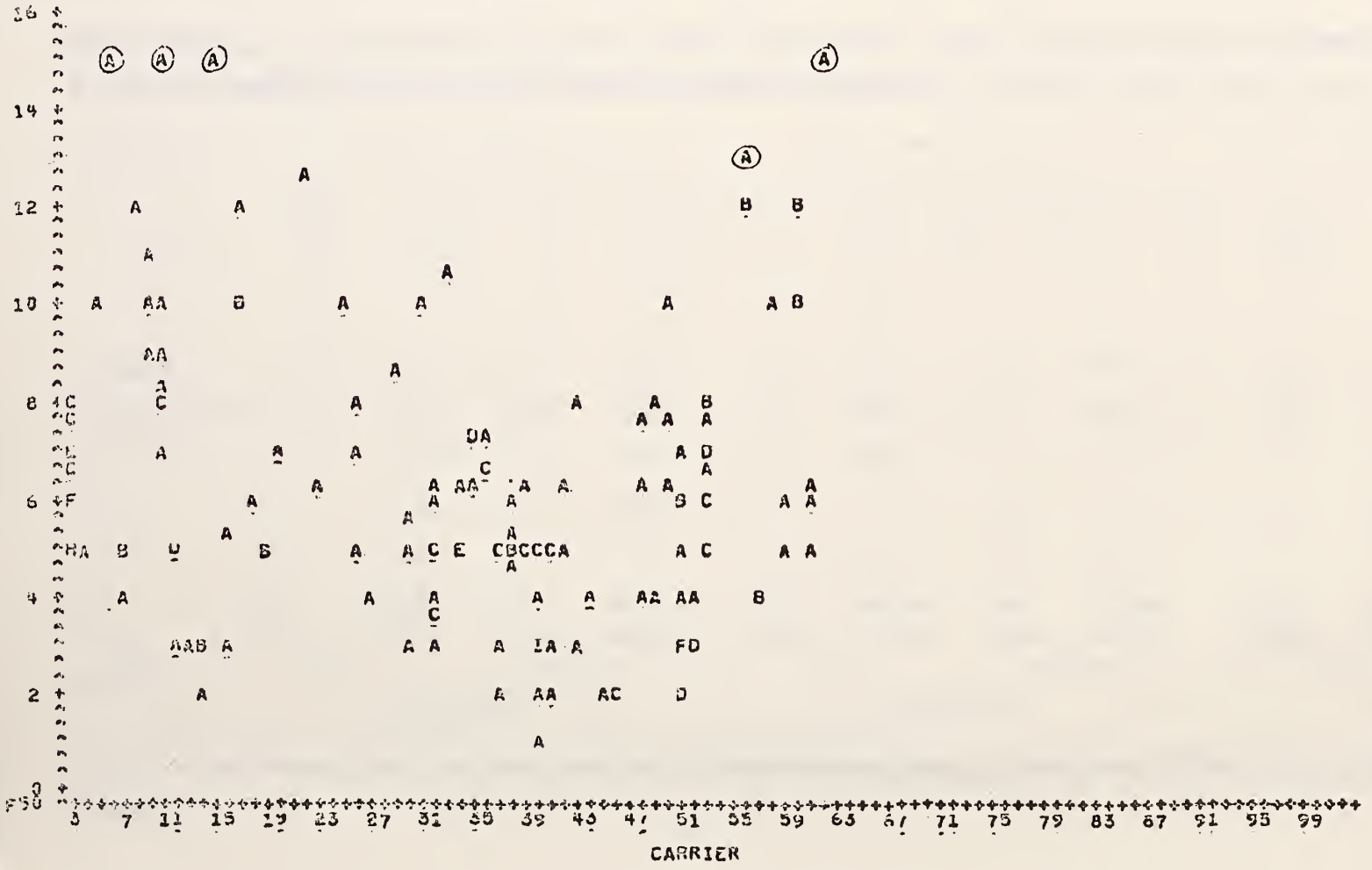


Figure 5-2

SCATTER PLOTS FOR REVISED 1977 FEES - OUTLIERS INCLUDED 17:13 FRIDAY, OCTOBER 27, 1978

PROCEDURE=14 TYPEDOC=0

PLOT OF CARRIER*F50 LEGEND: A = 1 OBS , B = 2 OBS , ETC

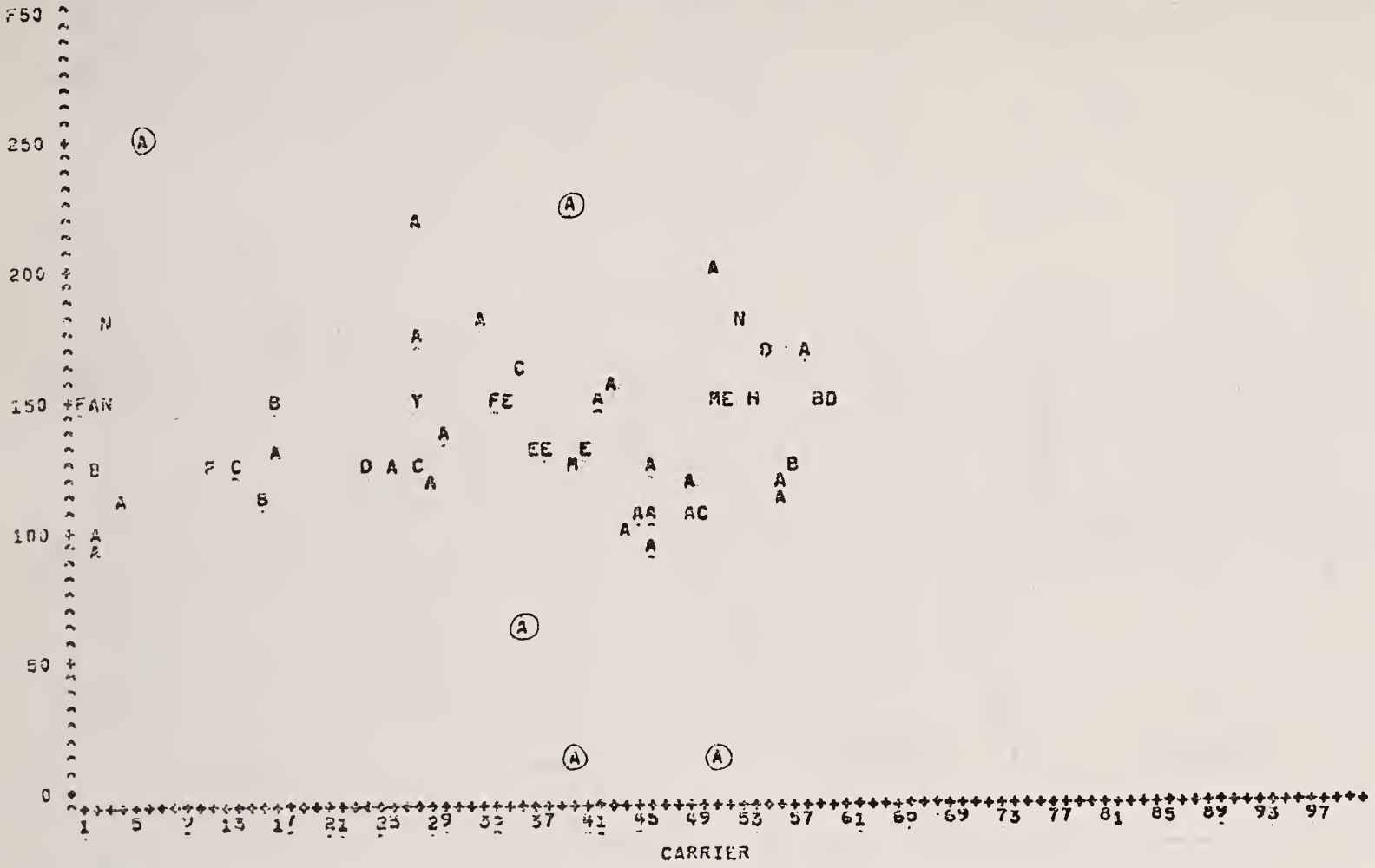
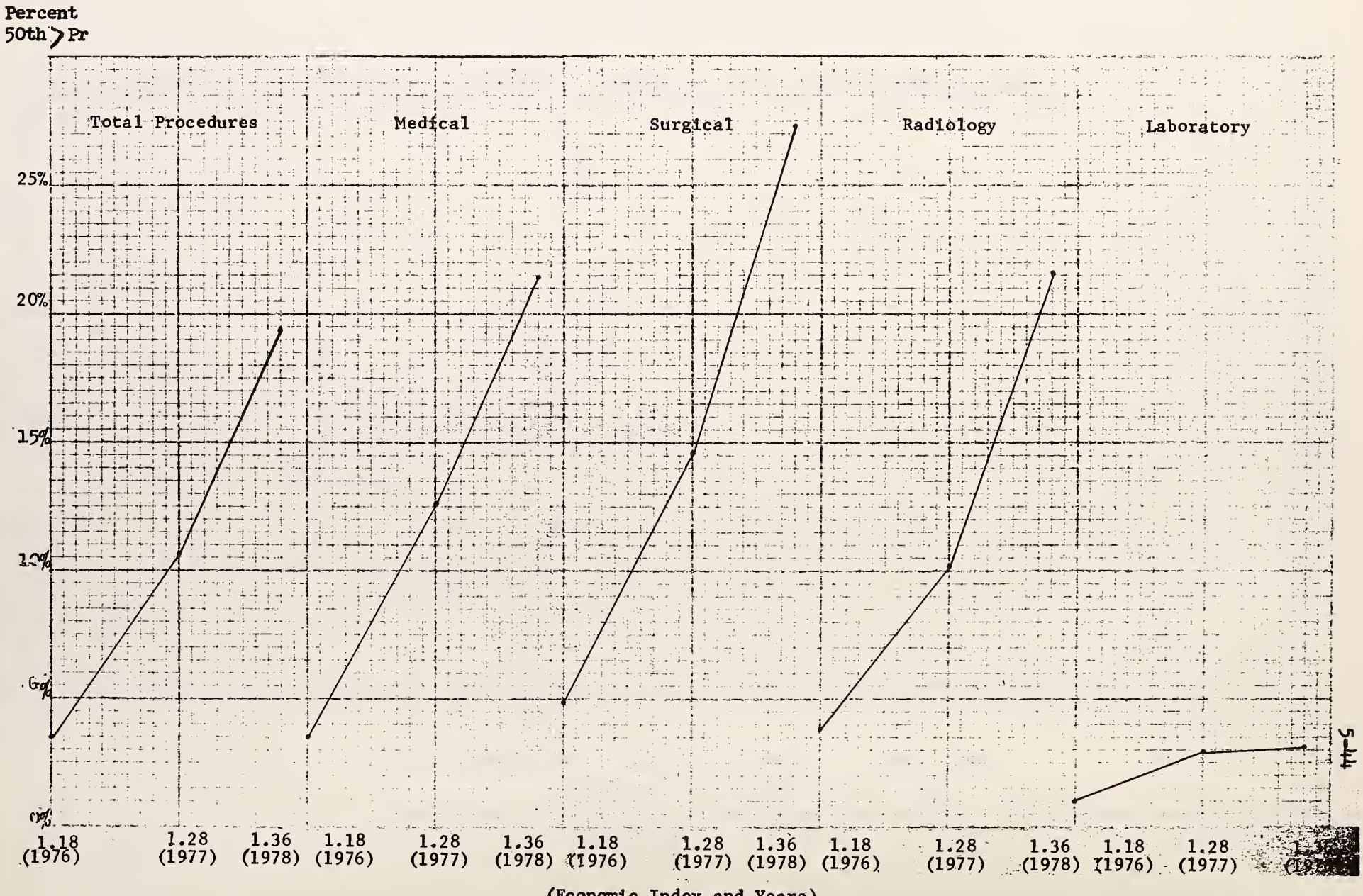


Figure 5-3

Plots of 1976, 1977, and 1978 Grouped Procedures for Which 50th Percentile Charge Exceeds Adjusted Prevailing



APPENDIX 5

Computational Formulas for Fee Indices

Where:

- F50 - 50th percentile of distribution of weighted customaries
- G - general practitioners
- S - specialists
- L - locality
- C - carrier
- U - national
- P - procedure
- r - ratio
- F - frequency
- W - weight
- n - number of observations

F50 - carrier-wide means

$$\overline{F50}_{GCP} = \frac{\sum_{n}^{G.P.} F50_{GCLP}}{n_{GC}}$$

$$\overline{F50}_{SCP} = \frac{\sum_{n}^{S.P.} F50_{SCLP}}{n_{SC}}$$

G.P. and S.P. combined

$$\overline{F50}_{GSCP} = \frac{\sum_{n}^{G} \sum_{n}^{S} (F50_{GCLP} + F50_{SCLP})}{\sum(n_{GC} + n_{SC})}$$

Ratio of carrier-wide mean fee to nation-wide mean fee, by procedure.

$$r_{GCP} = \frac{\overline{F50}_{GCP}}{\overline{\overline{F50}}_{GUP}}$$

$$r_{SCP} = \frac{\overline{F50}_{SCP}}{\overline{\overline{F50}}_{SUP}}$$

$$r_{GSCP} = \frac{\overline{F50}_{GSCP}}{\overline{\overline{F50}}_{GSUP}}$$

Carrier Index

$$GPI50_i = \frac{(\sum r_{GCP})}{n_{iGP}}$$

$$SPI50_i = \frac{(\sum r_{SCP})}{n_{iSP}}$$

$$CIP0_i = \frac{(\sum r_{GSCP})}{n_{iGP,\ SP}}$$

Weighted means using for each procedure its actual frequency in the locality as a weight.

$$w = f_{GCLP} \quad \text{or} \quad w = f_{SCLP}$$

$$\overline{F50}_{GCPW} = \frac{\sum^{n_G} (F50_{GCLP} \cdot f_{GCLP})}{\sum f_{GPCL}}$$

$$\overline{F50}_{SCPW} = \frac{\sum^{n_S} (\overline{F50}_{SCLP} \cdot f_{SCLP})}{\sum f_{SCLP}}$$

$$\overline{F50}_{GSCPW} = \frac{\sum^{n_G} \sum^{n_S} (F50_{GCLP} \cdot f_{GCLP} + F50_{SCLP} \cdot f_{SCLP})}{\sum (f_{GCLP} + f_{SCLP})}$$

Ratio of carrier-wide mean fee to nation-wide mean fee, by procedure.

$$r_{GCPW} = \frac{\overline{F50}_{GCPW}}{\overline{\overline{F50}}_{GUPW}}$$

$$r_{SCPW} = \frac{\overline{F50}_{SCPW}}{\overline{\overline{F50}}_{SUPW}}$$

$$r_{GSCPW} = \frac{\overline{F50}_{GSCPW}}{\overline{\overline{F50}}_{GSUPW}}$$

The same formulas apply to computation of indices for prevailing fees.

CHAPTER 6

DISCRETIONARY PRACTICES OF PART B CARRIERS IN REASONABLE CHARGE DETERMINATION

Chapter 5 examines the distribution of fees under Medicare. A central role in determining Medicare fee levels is played by carriers through the reasonable charge determination process, and the potential effect of inter-carrier variation in this process is important. Chapter 6 analyzes carrier practices which may have significant impact on fees: exclusions from the Medicare claims data base, inclusion of non-Medicare claims data, minimum numbers of charges required for fee level determination, specialty grouping, and locality delineation.

Introduction

Medicare was designed to remove financial barriers to health care facing the aged. This cannot be accomplished without also satisfying the implicit goal of maintaining an adequate supply of health care services. Included or implied in these goals are: prevention of inequitable transfer payments through Medicare between aged enrollees in different geographical areas or types of health situations because of fee level differences; offering incentive for appropriate distribution of supply of physicians' services in different specialties and localities; and equitable reimbursement for services of equivalent effort, investment in skill development, and responsibility.

Administration of Medicare was delegated to non-governmental insurance carriers in 10 regions under the general supervision of DHEW. Carrier practices regarding determination of fee levels and payment of charges for health care services are the intimate means of attaining Medicare goals within the fee-based sector of the medical market. As already noted, Medicare carriers are entrusted with many tasks in order to set reasonable charges for physician services. Procedures for some of these tasks are mandated in detail as specified in the Carriers Manual, but in the execution of other steps, carriers enjoy considerable discretion. Boundaries to carrier administrative discretion have been progressively narrowed, and it may be inferred that some of today's discretionary practices may be mandated--or forbidden--in the future. This report analyzes carrier fee-setting practices as they were in 1975.

The information on carrier practices available to HCFA can be classified as regular and special data flows. Much of the information tabulated reflects

the outcome of carrier administration and is discussed in the chapter concerning assignment and workloads. In 1976, when this study was undertaken, and through most of 1977, the primary source of information about carrier practices in implementing the reasonable charge basis for physician reimbursement was the evaluation questionnaire IM 75-53.

By means of the evaluation questionnaire, HCFA requested each regional Medicare office to report on the practices of each carrier in its jurisdiction. This provided a formal source of information regarding the compliance of carriers with the mandated procedures, and their discretionary practices. 1/ Responses by regional office to IM 75-53 were used as the basis of our research concerning carrier procedures. Examination of the questionnaire showed that some of the numerous specific items referred to are not of substantive interest for the Medicare pricing process although they check on compliance with certain procedural routines in Medicare regulations. The items studied by us were selected for their potential effect on customary and prevailing fees.

Among the subjects reviewed were exclusions from the claims data base, practices concerning non-Medicare data included by comparison or merger techniques, parameters for reasonable charge determination, and the different specialty groupings. Additionally, delineation of localities, which is discretionary at the carrier level, was considered. Practices that had previously been studied and that had already been made uniform under revised regulations, such as frequency of fee updates, were not in the questionnaire, nor were the methods of applying the economic index, which, although a nationwide mandated step

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1/ IM 75-53 had two parts, one of which asked for scoring of each carrier in a region. We found that these composite scores showed too little differences to permit extensive work based on this information. The small overall differences may have been due to to the nature of scoring mechanisms which assigned cardinal values to performance characteristics that lend themselves more readily to ordinal ranking. In addition, the scoring emphasized carriers' conformance within a specific framework rather than the discretionary procedures with which we are concerned.

in Medicare pricing, has a differential effect on different geographic areas and specialty groupings.

The questionnaire serves as only an approximate measure of the variability in practices. The selection by HCFA could not cover each of the many specific steps in reasonable charge pricing at which discretion can be exercised. Wording was at times ambiguous and regional office staffs at times interpreted questions differently. At other times they may have lacked information about what precisely the carrier was doing. Lack of precoding or structuring of questions contributed to non-comparable answers. Suggested modifications of certain questions in order to produce a more useful tool for monitoring individual carriers and to provide information which might lead to improved Medicare fee-setting policies have been forwarded to HCFA. A later questionnaire with a similar purpose, IM 77-76, incorporated a number of these suggestions, and especially a number of questions on specialty designation drafted by CUNY

Findings

Responses to each discretionary practice question were classified and tabulated. Table 6-1 shows responses by question and Table 6-2 shows carrier scores for individual carriers. Numerical ratings were assigned to each practice analyzed, on the basis of a hypothesized relation to fee levels. A score of "1" is used for the practice among possible alternatives that is most likely to keep fees down, a "2" is less constraining, and in some cases 3 or 4 alternatives ranked on "toughness" were recognized.

This report combines certain practices that appear to be a part of a single administrative decision regardless of their respective positions in the questionnaire. The range of preliminary aggregate scores among carriers is not very large. The scores more or less cluster in the middle range between "ideal"

stringency on the rated practices and "worst" leniency, so that, although distinctions can be made, carriers do not divide into two well-marked groups. While the numerical values are inevitably the result, in part, of the scale used in scoring, nevertheless the scores do suggest that the carriers traded off one practice against the other - if they were tough on one parameter or criterion, they made up for it elsewhere in the reasonable charge process.

This report relates to practices of 58 of the 62 carriers. The following four carriers were excluded: Occidental of California, Oklahoma Department of Public Welfare, Puerto Rico, and GHI of Florida. 1/

Exclusions From the Claims Data Base

Important reasons for excluding claims submitted for Medicare payments from the data base in determining Medicare reasonable charge covered by the questionnaire include situations where care was rendered by non-office-based physicians, token and extreme charges, and bills for service to persons not enrolled in Medicare.

Non-Office-Based Claims

The Carrier Manual #5032 permits use of the same pricing criteria for claims for service based on teaching-settings as for other claims for service by a physician if services rendered are similar to those provided other patients of that physician. However, provider-based physician claims were reported to be excluded by 93% of carriers while 16 of the 58 carriers (28%) were listed as excluding teaching-setting claims. (The large disparity may reflect in part the ambiguity of questionnaire language because of the actual considerable overlap between provider-based and teaching-settings.) We concluded that on balance,

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1/ Reasons for exclusion were as follows:
1. Occidental of California - overlaps with Blue Shield of California in 14 localities.
2. Department of Public Welfare, Oklahoma - overlaps with Aetna, Oklahoma.
3. Puerto Rico - four localities which are too small to form screens.
4. GHI of Florida - formed in 1976-77 with one locality after IM75-53 was administered.

exclusion of claims from either of these settings was deflationary. Specialists connected with teaching or other institutions may be able to command higher fees both because of their own reputations and supportive hospital facilities. However, reasons why fees could be lower in a teaching setting deserve mention, even though we believe that excluding them on the whole tends to check Medicare fees. The reasons why provider-based fees could be lower include:

The hospital could take up office expense equivalents in its accounts and collect for these cost items through Part A of Medicare; interns and residents may carry out functions for the doctor in whose name the bill is submitted, the hospital collecting for their services through Part A; a physician may be seeing patients during time for which his or her teaching salary gives adequate compensation.

In fact, Pennsylvania Blue Shield has stated that it excludes hospital-based claims because the amount does not reflect the full charge of non-hospital-based physicians. The IOM study of teaching physician reimbursement in teaching hospitals suggests that in general when hospitals collect on a fee basis, they earn revenues that they would lose by shifting to a cost basis, although impacts are believed to vary widely with specific arrangements with physicians and hospital circumstances.

Token and Extreme Charges

Ninety percent of the carriers excluded token and extreme charges from reasonable charge calculations. This was considered a stringent practice because while some low-priced claims might be eliminated, a charge could be several times higher than the central point of a distribution while the lower limit is held to - 100%. Half the carriers used as the parameters to define tokens and extremes either two standard deviations from the current reasonable charge or a fee of more than 200% above or less than 50% below that charge. These

answers were classed together since they define similar upper limits. Eight carriers (13.8%) used other percentage parameters. Some used relative value units as the criterion or routinely eliminated the highest and lowest charges. In still other cases, the criteria for exclusion were not specified.

Charges to Medicare Ineligibles

Exclusion of charges submitted as Medicare claims by or on behalf of patients not currently enrolled in Medicare, a practice of 72.4% of carriers, was interpreted as having an upward bias for Medicare prices. The reasoning behind this interpretation is that persons who declined enrollment or who let the premium lapse after either initial enrollment or their second and last chance to enroll are likely to be poor, and further, that doctors would tend to charge them lower fees. Failure of aged persons to maintain enrollment due to physical or mental infirmity might also cause some physicians to lower fees in consideration of such problems. Consideration of difficulties might also extend to patients for whom Medicare coverage terminates with the end of entitlement to benefits based on disability.

Finally, since most states buy Medicare coverage for their aged who are entitled to Medicaid, changes in such entitlement might cause some aged persons to become temporarily ineligible for Medicare even though provisions to prevent this from happening have been made.

For all reasons combined, more than 15% of the data base was estimated to be excluded by 19.0% of carriers. Less than this percent was reported excluded by 39.7% of carriers.[1/] For 41% of the carriers this information was not available. High exclusion rates were deemed to restrict fees because the criteria for exclusion tend to emphasize high-price situations - except for Medicare ineligibles, who are believed to account for a small proportion of claims data.

1/ In considering possible influence on fees, those with "percent unknown" were grouped with the small-percent group on the theory that the proportion excluded was insignificant when the volume was not known.

However, this statement should be qualified because of variation in incidence of potentially excludable claims.

Inclusions In the Claims Data Base

Consideration of other claims data along with Medicare data is a second type of discretionary practice reviewed in IM 75-53. Aspects examined here are data source, the way in which the data are used (comparison vs. merger), and the comparison of fee screens as an alternative way of relating the Medicare market to non-Medicare prices.

According to the Manual, carriers are expected to consider non-Medicare physician fees when setting reasonable charges. Paragraph 5002 setting forth criteria for determining reasonable charge states that "the reasonable charge for a service may not exceed the charge applicable for a comparable service and under comparable circumstances to the policyholders or subscribers of the carrier". Paragraph 5010 adds:"The carrier should therefore obtain information on the customary charges of physicians and other persons not only from the Medicare program but from other available sources, e.g., from its own programs, from other insurance programs, from the Federal Employee Health Benefit Program, from CHAMPUS, from any studies conducted by State or local medical societies, and from public agencies. It also may ask physicians or other persons for their charges for services rendered to the public in general where the carrier decides that circumstances will permit this".

In considering the data source - the program from which the claims originate, a critical consideration is whether the source is likely to generate charges higher than or lower than Medicare charges. Since fees under Medicaid, for example, may be the result of (low) flat-rate price schedules and often reflect fiscal stringency, they may be very different from fees allowed under Federal employees insurance plans, CHAMPUS and general private business charges.

The possibility of including non-Medicare data varies from carrier to carrier depending on the carrier's role as Medicaid or CHAMPUS fiscal agent or FEHBP contractor and by the nature of its private contract business. A variety of program features and statistics bearing on a carrier's potential for including non-Medicare data are reviewed in the Appendix to this chapter.

Answers to IM 75-53 revealed that four carriers included only Medicaid data, 17 included or compared private data and 8 included both in the determination of Medicare reasonable charges (Table 6-3). The remaining half of the carriers took account of Medicare charges exclusively in setting reasonable charge. Consideration of non-Medicare data was considered more price-containing than ignoring such data because of the potential check on the influence of extreme charges.

The second aspect of data inclusion that was analyzed was the use made of the other data, comparison vs. merger. The intent of the regulations is that Medicare fees do not exceed those for a comparable service rendered under comparable circumstances. As comparison with Medicare charges would be applied selectively to reduce Medicare allowed fees, it is considered potentially more stringent than merger although exactly what is compared and what use is made of the findings is not clear from the responses to IM 75-53. Comparison only was undertaken by 13.8% of carriers while 36.2% merged data. Of those merging, 15.5% had more than 25% non-Medicare data in the pool; the rest had less (Table 6-4). The remaining 50% of the carriers developed Medicare prevailings without any mode of considering non-Medicare charges.

Data merger and comparison are two methods of unifying Medicare price determination with other parts of the market for physicians' services. A third possible practice with a price-controlling potential is comparison of Medicare to other fee screens. This was done by a minority of carriers (36.2%), all of which

compared private business screens and one of which also compared its Medicaid fee screens. This last might have been considered most strict because of low Medicaid fees but the carrier happens to be Equitable-Wyoming, which uses the same pricing for both.

Parameters for Reasonable Charge Process

The important parameters in the RCP are the number of observations or values required to form a customary charge and the number of customaries required for a prevailing charge.

In general, carriers required more than a single instance of service to designate a doctor's customary charge for a given procedure. Since the customary is defined as the median of the doctor's charge distribution, such a measure based on a tiny distribution would have questionable meaning as a guide to pricing. The larger the number of charges required to set a customary, the stricter the carrier was rated. While 20.7% of carriers did not require as many as 3 charges, 65.5% did require 3, and another 13.8% required 4 or 5 charges as a minimum for a customary.

A second parameter chosen by the carrier was the minimum number of customary charges used to form a prevailing. Requiring a large number of customary charges to compute a prevailing for a procedure is deemed a strict practice on the assumption that, all else being equal, a market with few practitioners performing a procedure is more likely to be non-competitive and to have higher fees. Three carriers (5.2%) required 10 or more customaries for a prevailing, whereas 34.5% required up to 9. For the 60.3% of carriers requiring 3 or less, the highest price submitted could become the prevailing, which is mandated as the 75th percentile of the customaries.[1/]

1/ In April 1977 revised regulations more or less eliminated variation in parameters for forming customary and prevailing charges. For a customary, carriers were required to use a minimum of three charges with two alike, or else four charges. For a prevailing, five customaries for the same service were required. Other criteria could be applied only with regional office approval (Sections 5010 and 5020).

Another significant aspect of the reasonable charge process is the handling of the non-standard situation -- the procedures to be followed for the new doctor or when a customary or prevailing could not be set by standard methods.

There are three recognized situations in which data to form a customary can be lacking: if an established physician performs a given procedure infrequently; when a physician with a previous practice moves to a community; and when a physician first starts in practice.

In the first two of these cases, using the 50th percentile as the substitute for a physician's customary charge is considered less strict than use of a "conversion factor". On the assumption that the price level of any one doctor is consistent across procedures, the conversion factor keeps each doctor's fee for a particular procedure in his/her relative place in the distribution among the fees of doctors in a locality. To bring all the low-priced doctors up to the 50th involves more Medicare expenditure than paying each at his/her normal level, whereas the reduction for the high-priced doctors is only from the 75th to the 50th (since those above the prevailing would be brought down to the prevailing in any case). (Implicit in this conclusion is the assumption that the distribution of procedure charges determining the 50th percentile is the same as the distribution of the charges for which there are no customaries.)

When an established physician performs a procedure rarely, about one-fourth of the carriers (24.2%) used the conversion factor, while 36.2% used the 50th percentile in determining allowed charge.[1/] An additional 39.7% used the lower of submitted charge or prevailing, which is less constraining than either the conversion factor or the 50th.

It should be noted that the economic index puts a lid on the effects of a doctor's conversion factor as well as on the 50th percentile.

1/ Antitrust rulings no longer allow use of conversion factors based on relative value units for anesthesiology and other specialties. Carriers may use the 50th percentile to fill gaps in the customary charge screens.

For the case in which an established doctor moves into a community, alternative practices of varying restrictiveness are available to substitute for the customary. Fewer than 9% of carriers use the conversion factor (or the prevailing if lower), considered most stringent as explained above. Half use the lower of submitted charge or 50th percentile. An additional 39.7% set the fee at the lower of submitted charge or prevailing, which is less constraining than either the conversion factor or the 50th.

Finally, to handle the third of the situations listed above, all carriers use the 50th percentile to set Medicare fees when a new doctor opens practice. While this was not considered a discretionary practice, the length of the base period before a new doctor was no longer considered as new for fee-setting purposes was variable.

It was considered more strict to require new doctors in town to have completed three months base year experience before developing a customary charge profile than to have no minimum time requirement. This was the rule for 70.7% of carriers; 20.7% imposed other conditions.

Carriers used varying procedures to determine prevailings when an insufficient number of customaries was available. In the absence of a standard locality prevailing, 48.3% of carriers used a conversion factor, which was considered more strict than the substitution of a carrierwide prevailing (32.8% of carriers) or the use of individual consideration (19.0%) (Table 6-2).

Specialty Grouping

Another way in which carrier practices varied is in the grouping of physicians' customary fees to form prevailings. Fourteen percent of carriers established no more than one prevailing per procedure, i.e., had no specialty subgroups; 26% used 2 to 5 subgroups, and 12% had more than 5. An additional 48% recognized

groups but did not indicate how many. The effect of the number of specialty groupings on Medicare fees is hard to predict because of the variation that may exist in such factors as:

- The current market share of GPs and specialists for a given procedure in a given locality
- The ability of GPs to retain patients at fees close to or even exceeding those of specialists, and the shape of the distributions of both GP and specialist fees
- Variation in criteria for classification as a specialist
- The alternative procedures on which members of a given specialty can choose to concentrate their practice

Effects of changes in specialty grouping on assignment rates, customary charges, patient selection of different doctors, and volume and mix of services are important aspects of tracing how specialty grouping rules affect costs to the Medicare program and to the aged and should be analyzed in the future as necessary data elements are assembled.

While there are some paradoxical effects of splitting off specialties, it was assumed that as a general rule few or no groupings tend to restrain fees because high-priced subgroups - whether GP or specialty - are placed in a common pool. The cutting off of the top quartile would wipe out the highest fees although this is partly offset by the raising of the 75th percentile.

A contrasting type of "tough" approach to specialty grouping would recognize only certain specialties for performance of given procedures and require credentials that demonstrate an adequate test of skill and preparation. Such specialty restriction would be most applicable to procedures distinguished by complexity, risk factors, etc. However consensus on just which procedures

should be so limited is evidently far off. A further complication of specialty grouping is introduced by efforts to equate physician substitutes' fees for a given procedure with those payable to physicians. Information on carrier criteria for recognizing specialists that will be available through answers to IM 77-76 and future updates may be helpful in approaching these problems. Outcome studies would also be useful in deciding the role of specialists in relation to quality of care for the elderly.

Localities

Carrier locality delineation choices (combined with actual population distribution) result in highly variable locality population size. Regarding localities, IM 75-53 asked the following question, (C1),

"Describe the geographic area (locality) breakdown used by the carrier for all services. Does the breakdown meet the requirements of #6706.1 of the Part B Intermediary Manual?"

Section #5020.1 (previously #6706.1) offers only very general guidelines and the answers by and large stated that the carriers met the locality standards.

As already noted, 58 Medicare carriers were included in our analysis of discretionary practices. Of these carriers, 5 each had 10,000,000 or more population in its territory, and another 8 had between 4 and 10 million while most, 34, had between 1 and 5 million. Finally, 11 carriers had under 1,000,000 population each. (Tables 6-5 and 6-6)

The carriers divided their territories into a total of 265 localities.[1/] Of these localities, 55.1% had populations less than 500,000, and 41.5% had

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1/ This number is used because county data were used. Whenever split counties were used by carriers in forming localities, all values were assigned by us to one locality using population as a criterion.

between 500,000 and 3,000,000 while 3.4% had 3,000,000 or over (Table 6-7). Locality population varied from a minimum of 25,700 (Aetna-Nevada) to a maximum of 5,372,000 (Illinois Medical Service) with a nationwide average population per locality of 774,365 (Tables 6-8 and 6-13).

Carrier ranks by aggregate population were found not to correlate closely with their ranks by average population per locality (Table 6-5). We also found a general lack of relationship between the number of localities in a carrier's jurisdiction and the average population per locality (Tables 6-9 and 6-13). The majority (51.2%) of carriers had between 1 and 5 localities (Table 6-10). Among these carriers maximum locality size is 4 million or more, which is considerably larger than the maximum for the other carriers. However, there is no clear relationship between the number of localities into which a carrier divides its territory and minimum locality size.

Average population per locality varies across Medicare regions from about 400,000 in Region VIII (Denver) to about 2,000,000 in Region II (New York), and the number of localities varies from 12 in Region X (Seattle) to 54 in Region V (Chicago). There is no relationship between population per locality and the proportion of the U.S. population represented by a Medicare region (Table 13).

States with more than one carrier were examined separately. Among 5 multi-carrier states, Illinois has one carrier with a single locality in which is found 48.3% of the total state population, and a second carrier with 15 localities containing 51.7% of the state's population. However, in Wisconsin, which also had two carriers, over 75% of the population is in the territory of the carrier with many (10) localities and the rest in that of the carrier with just one locality. The situation for the other multi-carrier states is mixed as to variation in number of localities and division of population among carriers (Table 6-12).

Much more information is needed regarding the basis of locality designation by the carriers and possible consequences of various combinations of counties in a locality.[1/] If localities are very small, price competition based on alternative sources of supply may not exist and there would be less of a mixture of socioeconomic levels engaging in a common medical market than for larger areas. Administratively, it is possible that the standard process of determining prevailings would not be applicable.

A rough guide to considering the effect of locality population on the Medicare reasonable charge process was developed by considering lens extraction (cataract surgery), a frequent procedure among the aged. With about 10,000 ophthalmologists in the U.S. and an annual rate of about 1% for cataract surgery in the aged population, of about 20,000,000 persons, an average of about 20 cases per ophthalmologist is derived. This means that 2,000 aged are required for 20 cases; as aged persons make up 10% of the population, an average of 20,000 population of all ages [2/] would sustain one ophthalmologist. Ten doctors in competition would require 200,000 persons. Lens extraction is a frequent procedure; procedures only 1/5 as frequent would require 1,000,000 persons. While the estimating procedure is very crude, it does bring out the possibility of establishing guidelines for minimum locality size to assure any desired density of practitioners available to perform Medicare procedures needed by aged patients. The figure of 500,000 population per locality - above which heterogeneity, population characteristics, and density and competition of practitioners are believed to be significant - has been chosen as a compromise cutoff point for the analysis of discretionary practices. Average locality

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1/ A simplified hypothetical example of the fee effects of various locality boundaries is presented in the Appendix.

2/ Assuming for simplicity zero use below age 65.

size of about 70% of carriers falls above this point while for 30% the average is lower. However, over 55% of localities were under 500,000 in population.

Summary

Carriers clearly do follow different procedures in determining reasonable charges. They generally exclude tokens and extremes and provider-based claims but do not generally exclude teaching-setting claims and charges to Medicare ineligibles. Recognized strong parameters for token and extreme charges are found for only 1/2 of carriers. Only 1/5 are known to have excluded over 15% of data.

Carriers also split half and half as to any use of non-Medicare claims data, and of those that do use such information, under 30% compare only and do not merge data. Under 2/5 compare other fee screens.

For the period covered by IM 75-53, 4/5 of carriers required 3 or more charges to create a customary, but only 2/5 required more than 3 customaries to form a prevailing. (Recent mandated changes impose a uniform minimum - See p.6-10). Seven out of 10 carriers require a 3 month minimum of base year claims for profile development.

The percentages using various pricing methods for new doctors' claims and others lacking customaries vary by situation. Four out of 5 use conversion factors or a substitute (carrier or state-wide) prevailing in the absence of a locality prevailing.

Only 14% of the carriers do away with specialty groupings. Finally, locality delineation choices (combined with actual population distribution) result in highly variable locality population size.

Additional Information Needed

The summary of diverse carrier discretionary practices in implementing

the reasonable charge process presented above was derived from responses to IM 75-53. As already indicated, revisions have been incorporated in IM 77-76 which should make available additional significant data -- particularly concerning specialty delineation.

Another discretionary practice, choice of procedural terminology, that was not captured in IM 75-53 except very generally, is subject to more refined query in IM 77-76. Comparability of procedure codes between carriers is important for equitable treatment of individual physicians under Medicare and is basic to using carrier data on price and frequency of procedures in analyzing program operations and costs. The information on coding structure obtained by IM 75-53 did not show whether the carrier uses an independent terminology or one in wide use such as the California Relative Value Scale, the number of different codes used by major fields, whether the carrier requested the physician to follow a particular coding structure for Medicare claims, and whether this was different from that used in private business claims.

In connection with CUNY's micro study, the comparability of Blue Cross/Blue Shield of Greater New York and GHI charge data for most frequent Medicare procedures was examined in detail. This raised a question as to general uniformity of coding among all Medicare carriers. For many procedures, identical descriptions are used by Blue Cross/Blue Shield of Greater New York and GHI. These present no problem in comparison. But in other cases, procedures that appear to be identical are described in slightly different terms. Procedures may be classified as in-hospital or out, initial or subsequent, partial or complete, and along various other axes. The result is that where carriers use different systems, some procedure definition boundaries coincide, but others, although similar, differ

between carriers. In practice, definitions of procedures may vary among doctors as well as among carriers because of quality of care, ancillary or incidental services included in one charge and differing arrangements regarding follow-up visits. Useful knowledge would be gained from field audits of doctors' service description habits as well as research concerning carrier edit practices regarding procedure coding and their coding rules.

Several other aspects of carrier administration of the reasonable charge process are more thoroughly covered by IM 77-76 than IM 75-53 including the exact formulae specified for computation of conversion factors, and the definition of "invalid" customaries retained in computation of prevailings. In the future revisions several other categories of information would merit attention.

Knowledge about carrier consideration of non-Medicare claims data could be improved by collecting, for both private insurance and Title XIX, data on the volume of the other business being merged relative to Medicare volume, and on the commonality of specialties and procedures with those reimbursed under Medicare, expressed in quantitative terms. For private insurance data that is merged, the payment basis should be known--whether basic or major medical insurance. For Title XIX claims, data on the use of relative value scales and UCR practices (updating the Institute of Medicine's Medicaid questionnaire) would help in understanding the possible effect of data merger on Medicare reasonable charge level and structure.

Increased knowledge about not only the nature of the potential source and the relative volume of data from various sources but the specific way that information is used when merging or comparing would add significance to any analysis of the fee effect of merging non-Medicare with Medicare data.

Certain aspects of the exclusion of data from Medicare reasonable charge calculations also merit attention. The percentage of "Medicare" data excluded is of obvious interest. It would also be desirable to learn more about the specific circumstances surrounding exclusion of teaching setting claims.

Assessment of practices relating to token and extreme charges would be facilitated by information on the types of procedures for which such charges frequently occur. A token charge can be a part of a major expensive service that is separately billed. Interpretation of a token charge depends also on the minimum used for customaries, for with a small minimum, the decision as to whether a charge is extreme becomes arbitrary.

An unusual charge may be related to a doctor's inexperience. Instances of infrequent performance can reflect a GP rising to an emergency, a specialist accommodating a patient's convenience, any doctor responding to economic motives in the absence of local hospital constraints, infrequent incidence of the condition,etc. How the carrier handles extremes could be analyzed in relation to particular types of situations and their potential for influencing customary and prevailing fees.

The list of "ideal" information is very long and choices will have to be made about what information gathering is most important. However, optimal administration of Medicare strongly suggests that future revisions of IM 77-76 should inquire about such aspects of Part B pricing procedures as steps in customary determination for fee-for-service based group practices, and repayment methods for physicians other than fee-for-services concerning which special carrier directions are involved such as in-hospital visits, phone calls, psychologist and ophthalmologist charges.

Discretionary Practices and the Medicare Market

The RCP process has been diagrammed in a path outline showing some 20 steps (Appendix 6-D). As recognized in HCFA's original scoring scheme for IM 75-53 items, various steps taken by the carrier are not of equal significance. Some steps are trivial; others have high leverage. Some are mandated, others suggested, still others are an option toward which HCFA appears to be neutral.

The various steps have the potential for differential as well as overall import on the fee levels. The differences may result in unequal treatment to practitioners in different carrier areas. Moreover, if allowed charges in some areas are low relative to others, burdens to patients through copayments and variation in assignment rates may be greater. Benefit uniformity may not be maintained.

Certain stages of the reasonable charge process and carrier implementation of them affect some beneficiaries more than others. Similarly, some affect few practitioners and others affect many. Some have greater impact on GPs most often, others affect certain specialties more than others. Some have greater significance for high-volume procedures utilized by many patients, others are more important with regard to infrequent procedures. The potential for integrating the Medicare market with the market of younger patients exists for some procedures, but rarely for others.

A large volume of office visits is generated by patients with chronic conditions. Another segment of Medicare use is defined by major surgery, which, although it may be multi-stage, is essentially non-repetitive, and a surgeon has little possibility of retaining a patient for care for a given condition. Still another situation is the catastrophic occurrence in which many services are received from different sources, large hospital bills are incurred, and multiple diagnoses or complications of a primary diagnosis are present. Several

different practitioners may serve a given patient. It seems likely that Medicare patients use a disproportionate share of consultant services, particularly in severe illness, compared to other age groups.

Some steps would have most significance for localities that are experiencing such demographic or medical economic trends as: growth of general population, entry of young doctors, relocation of older doctors, rise in general incomes, change in percent aged, or expansion of hospital facilities. Such trends would affect the probabilities of infrequent performance of a given procedure, opportunities for changing procedure mix, applicability of a 3-month minimum for customaries, and the likelihood that merger of private and Title XIX charge data will substantially affect reasonable charge determination.

As noted at the outset, adequacy of HCFA information and Medicare administration is to be interpreted in relation to policy goals. In addition, from the point of view of control of inflationary trends without reducing desired utilization or distorting it toward undesired patterns, the trends and composition of the medical care market need to be taken into account, for the impact of specific discretionary practices on fees, utilization, and costs depends on the joint probabilities created by the nature of a practice and the real configuration of the Medicare market.

TABLES

TABLE 6-1

Carrier Variations with Respect to 13 Selected Discretionary Practices Under Medicare Part B[1/]

Alternative Practices	Code[2/]	Carriers Number		Percent	
(AIIa: Data excluded from data base history)					
1. Teaching setting claims					
Yes	1	16		27.6	%
Other	2	42		72.4	
- No			33		56.9
- Not applicable			9		15.5
2. Provider based physician claims					
Yes	1	54		93.1	
No	2	4		6.9	
3. Token and/or extreme charges					
Yes with a 2σ parameter or $\geq$ 200% or $\leq$ 50% of reasonable charge	1	29		50.0	
Yes with other percent parameters	2	8		13.8	
Yes with all other parameters	3	15		25.9	
- RVU analysis			4		6.9
- Action and dump codes			8		13.8
- Highest and lowest charge			1		1.7
- Judgment			2		3.4
No	4	6		10.3	
4. Charges to Medicare ineligibles					
No	1	16		27.6	
Yes	2	42		72.4	
5. (AIIb2: Percent of total data base excluded)					
$>$15%	1	11		19.0	
Other	2	47		81.0	
- up to 15%			23		39.7
- unknown			24		41.4
6. (AIIIa: Other data included with the Medicare data)					
Title XIX	1	4		6.9	
Title XIX & private business	2	8		13.8	
Private business	3	17		29.3	
None	4	29		50.0	

TABLE 6-1 (continued)

Carrier Variations with Respect to 13 Selected Discretionary Practices Under Medicare Part B[1/]

Alternative Practices	Code[2/]	Carriers Number	Percent	
7. (AIIIb: Other data merged or compared with Medicare data) (AIIIc: Percent of data base non-Medicare)				
Compared	1	8	13.8	%
Merged with > 25% non-Medicare data	2	9	15.5	
Merged with ≤ 25% non-Medicare data	3	12	20.7	
Neither merge or compare	4	29	50.0	
8. (DVII: Compare Medicare customary and/or prevailing charge screens to any other screens)				
Private business and/or Title XIX	1	21	36.2	
No comparison	2	37	63.8	
9. (BI: parameters selected to arrive at a customary charge)				
4-5 charges	1	8	13.8	
3 charges	2	38	65.5	
1-2 charges	3	12	20.7	
10. (CIII: Minimum number of customary charge records and/or services to compute a prevailing charge				
≥ 10	1	3	5.2	
4-9	2	20	34.5	
≤ 3	3	35	60.3	
11. (BIX: requirement of 3 months base year experience before developing a customary charge profile)				
Yes	1	41	70.7	
Other constraints	2	12	20.7	
No	3	5	8.6	
12. (DIa1: Pricing sequence in absence of a customary charge)				
Lower of prevailing charge or conversion factor	1	14	24.2	
50th percentile	2	21	36.2	
Lower of submitted charge or prevailing charge	3	23	39.7	

TABLE 6-1 (continued)

Carrier Variations with Respect to 13 Selected Discretionary Practices Under Medicare Part B[1/]

Alternative Practices	Code[2/]	Carriers Number	Percent
13. (DIa2: pricing sequence in absence of a prevailing)			
Conversion factor	1	28	48.3
Carrier-wide or state-wide prevailing	2	19	32.8
Individual consideration techniques	3	11	19.0
14. (DIX: reimbursement of an established physician with no customary)			
Lower of conversion factor or prevailing charge	1	5	8.6
Lower of submitted charge or 50th percentile	2	29	50.0
Lower of submitted charge or prevailing charge	3	24	41.4
15. (CII: provider specialty grouping for computing area prevailing charges)			
No grouping or No separate prevailing charges	1	8	13.8
2-5 groups	2	15	25.9
> 5 groups	3	7	12.1
Grouping recognized	4	28	48.3

1/ Derived from I.M. 75-53

2/ Coding in ascending order with lowest number representing the toughest alternative practice.

TABLE 6-2

Individual Carrier Responses to Questions on 13 Selected Discretionary Practices 1/

Carrier ID			Carrier Name	Carrier Questions															
				AIIa 1	2	3	4	AIIb2 5	AIIIa 6	AIII b&c 7	DVII 8	BI 9	CIII 10	BIX 11	DIa1 12	DIa2 13	DIX 14	CII 15	Total Score
1	38	1	Connecticut General	2	1	1	1	1	4	4	2	2	3	1	2	2	2	2	30
1	60	1	Union Mutual Life, Maine	2	1	1	1	2	3	1	1	2	3	1	1	2	1	2	24
1	14	0	Massachusetts, Blue Shield	1	1	1	2	1	3	2	2	3	2	1	2	2	2	2	27
1	18	0	New Hampshire-Vermont Blue Shield	2	2	4	1	2	1	3	2	2	3	1	3	1	3	1	31
1	24	0	Rhode Island Blue Shield	2	2	4	2	2	3	2	2	1	2	1	2	1	2	1	29
2	20	0	Blue Shield of Greater New York	1	1	2	2	2	4	4	1	2	3	1	1	2	1	2	29
2	21	0	Blue Shield of Western New York	2	1	1	2	2	4	4	1	1	2	1	1	1	2	1	26
2	46	1	Group Health Insurance	1	1	1	2	2	3	2	2	2	3	3	1	2	2	4	31
2	48	3	Metropolitan Life, New York	2	1	1	2	2	4	4	2	2	1	1	1	1	2	2	28
2	19	0	Genesee Valley Medical Service, New York	2	1	4	2	2	4	4	2	3	3	1	2	3	2	1	36
2	55	2	Prudential, New Jersey	2	1	1	2	2	4	4	2	2	3	3	1	2	2	4	35
3	05	0	Delaware Blue Cross/ Blue Shield	2	1	3	2	2	2	3	1	1	3	2	3	1	3	4	33
3	06	0	Medical Service, Washington, D.C.	2	1	4	2	1	3	2	1	2	3	3	3	1	3	4	35
3	13	0	Maryland, Blue Shield	2	1	1	2	2	3	1	1	2	3	1	3	2	3	3	30
3	23	0	Pennsylvania Blue Shield	2	1	2	2	1	3	2	1	2	1	2	3	3	3	4	32

TABLE 6-2 (continued)

Individual Carrier Responses to Questions on 13 Selected Discretionary Practices 1/

Carrier ID	Carrier Name	Carrier Questions															
		AIIa				AIIb2	AIIIa	AIII b&c	DVII	BI	CIII	BIX	DIa1	DIa2	DIX	CII	Total Score
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
3 59 4	Travelers, Virginia	2	1	1	1	2	4	4	2	1	3	2	2	1	2	2	30
3 51 5	Nationwide Mutual, West Virginia	2	1	3	2	2	3	3	2	2	2	1	3	1	3	4	34
4 01 0	Blue Cross/Blue Shield, Alabama	2	1	1	2	2	1	2	1	3	3	1	2	3	2	4	30
4 07 0	Blue Shield, Florida	2	1	1	2	2	3	1	1	1	2	1	2	3	2	1	25
4 54 2	Prudential, Georgia	2	1	1	2	2	3	1	1	2	3	1	1	3	1	4	28
4 47 3	Metropolitan, Kentucky	2	1	1	2	1	4	4	2	2	1	1	1	2	2	2	28
4 58 4	Travelers, Mississippi	2	1	4	2	2	4	4	2	3	3	1	2	1	2	3	36
4 56 2	Prudential, North Carolina	2	1	1	2	2	4	4	2	2	2	1	1	3	1	2	30
4 25 0	Blue Shield, North Carolina	2	1	1	2	2	2	2	?	2	2	1	2	3	2	2	28
4 43 6	Equitable, Tennessee	2	1	2	2	2	4	4	2	2	3	1	2	3	2	2	34
5 08 0	Illinois Medical Service	2	1	1	2	2	3	1	1	2	2	2	3	3	3	2	30
5 39 1	Continental Casualty, Illinois	1	1	1	1	2	4	4	2	2	3	2	3	1	3	4	34
5 09 0	Mutual Medical Services, Indiana	1	1	2	2	2	2	3	1	1	3	2	3	1	3	4	31
5 16 0	Michigan Medical Service	1	1	4	1	2	4	4	1	3	2	1	3	1	3	2	33
5 57 4	Travelers, Minnesota	1	1	1	1	2	4	4	2	3	3	2	2	1	3	3	33
5 15 0	Minnesota Medical Service	1	1	2	1	2	3	3	1	2	3	1	3	1	3	3	30

TABLE 6-2 (continued)

Individual Carrier Responses to Questions on 13 Selected Discretionary Practices [1/]

Carrier ID			Carrier Name	Carrier Questions															
				AIIa				AIIb2	AIIIa	AIII b&c	DVII	BI	CIII	BIX	DIa1	DIa2	DIX	CII	Total Score
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
5	50	5	Nationwide Mutual, Ohio	1	1	3	2	2	3	3	2	2	2	1	3	1	3	4	33
5	30	0	Surgical Care, Milwaukee	1	1	1	1	2	3	1	1	2	3	2	2	1	3	4	28
5	31	0	Wisconsin Physicians Service	1	1	2	1	2	4	4	1	3	3	1	3	2	3	4	35
6	02	0	Arkansas Blue Cross/ Blue Shield	2	1	3	2	2	3	3	1	1	3	1	3	1	3	3	32
6	53	1	Pan American, Louisiana	2	1	1	2	1	4	4	2	3	3	3	3	2	3	4	38
6	42	6	Equitable, New Mexico	2	2	1	2	2	4	4	2	2	3	3	2	2	2	2	35
6	36	7	Aetna, Oklahoma	2	1	1	2	2	1	3	2	2	2	1	2	2	2	4	29
6	27	0	Group Medical & Surgical Service, Texas	2	1	3	1	2	2	3	2	3	3	1	3	1	3	4	34
7	10	0	Iowa Medical Service	2	1	2	2	2	2	3	2	2	3	1	3	1	3	4	33
7	11	0	Blue Shield of Kansas City	2	1	3	2	2	4	4	2	1	2	1	3	2	3	4	36
7	12	0	Kansas Physicians Service	2	1	1	1	2	2	3	1	2	3	1	3	3	3	1	29
7	45	1	General American, Missouri	1	1	2	2	2	4	4	2	2	3	1	3	1	3	4	35
7	49	1	Mutual of Omaha, Nebraska	2	2	1	2	2	4	4	2	2	2	1	3	2	3	3	35

TABLE 6-2 (Continued)

Individual Carrier Responses to Questions on 13 Selected Discretionary Practices [1/]
(continued)

Carrier ID	Carrier Name	Carrier Questions															
		AIIa				AIIb2	AIIIa	AIII b&c	DVII	BI	CIII	BIX	DIa1	DIa2	DIX	CII	Total Score
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
8 04 0	Colorado Medical Service	1	1	3	2	1	4	4	2	2	2	2	3	1	2	4	35
8 17 0	Montana Physicians Service	2	1	3	2	1	4	4	2	2	2	1	1	1	2	4	32
8 22 0	North Dakota Physicians Service	2	1	3	2	1	3	1	1	3	3	2	1	1	2	1	27
8 26 0	South Dakota Medical Service	2	1	3	2	1	4	4	2	2	3	2	1	1	2	1	31
8 28 0	Utah Blue Shield	1	1	3	2	2	4	4	2	2	3	1	3	1	2	4	35
8 44 6	Equitable, Wyoming	2	1	3	2	1	2	1	1	2	3	2	2	1	2	2	27
9 33 7	Aetna,Arizona	2	1	1	1	2	4	4	2	2	2	1	2	2	2	4	33
9 03 0	California Physicians Service	1	1	3	2	2	2	2	2	3	2	1	1	1	1	3	28
9 34 7	Aetna, Hawaii	2	1	1	1	2	4	4	2	2	3	1	2	2	2	4	34
9 35 7	Aetna, Nevada	2	1	1	1	2	4	4	2	2	3	1	2	2	2	4	34
0 32 7	Aetna, Alaska	2	1	1	1	2	1	3	2	3	2	1	2	2	2	4	30
0 41 6	Equitable, Idaho	2	1	3	2	2	4	4	2	2	3	1	2	3	2	2	36
0 37 7	Aetna, Oregon	1	1	1	2	2	4	4	2	2	2	1	2	2	2	4	33
0 29 0	Washington Physicians Service	2	1	3	2	2	3	2	1	2	2	1	1	1	3	4	30

1/ Source: Table I

Table 6-3

Carrier Distribution by Percentage of Merged Non-Medicare Data [a/]

Type Data	Percent Merged		Total
	≤ 25%	> 25%	
Private	4	6	10
Private & Title XIX	6	2	8
Title XIX	2	1	3
Total	12	9	21

a/ Source: Derived from I.M. 75-53

Table 6-4

Carrier Distribution by Compared and Merged Non-Medicare Data [a/]

Type of Non-Medicare Data

	Private	Private & Title XIX	Title XIX	Total
Compare	7	1		8
Merge	10	7	4	21
Total	17	8	4	29

a/ Source: Derived from I. M. 75-53

TABLE 6-5

Carrier Ranks for Population in Carrier Territory and Average Population Per Locality 1/

Carrier	1 Population (000)	2 Rank	3 Number of Localities 2/	4 Average Population Per Locality (000) (1) ÷ (3)	5 Rank
California Physicians Service	20,907	1	28	747	29
Group Medical & Surgical Service Texas	12,049	2	32	377	46
Pennsylvania Blue Shield	11,835	3	4	2,959	2
Nationwide Mutual, Ohio	10,717	4	15	714	31
Blue Shield of Greater New York	10,243	5	5	2,049	9
Michigan Medical Service	9,099	6	4	2,275	7
Blue Shield of Florida	8,090	7	4	2,021	10
Prudential, New Jersey	7,330	8	3	2,443	6
Massachusetts Blue Shield	5,800	9	2	2,900	3
Continental Casualty, Illinois	5,759	10	15	3 84	45
Illinois Medical Service	5,372	11	1	5,372	1
Prudential, North Carolina	5,36	12	2	2,681	5
Mutual Medical Service, Indiana	5,330	13	4	1,333	15
Prudential, Georgia	4,882	14	4	1,220	16
Equitable, Tennessee	4,129	15	5	826	27
Travelers, Virginia	4,098	16	4	1,024	22

TABLE 6-5 (continued)

Carrier	1 Population (000)	2 Rank	3 Number of Localities 2/	4 Average Population Per Locality (000) (1) ÷ (3)	5 Rank
Pan American, Louisiana	3,764	17	8	470	41
Blue Cross, Blue Shield Alabama	3,577	18	6	596	36
Wisconsin Physicians Service	3,532	19	10	353	51
Washington Physicians Service	3,476	20	4	869	26
General American Life, Missouri	3,451	21	3	1,150	19
Metropolitan Life, Kentucky	3,357	22	3	1,119	20
Metropolitan Life, New York	3,321	23	2	1,660	13
Connecticut General	3,088	24	4	772	28
Iowa Medical Service	2,855	25	8	357	50
Maryland Blue Shield	2,854	26	3	951	24
Blue Shield, South Carolina	2,785	27	3	928	25
Medical Service, Washington, D.C.	2,772	28	1	2,773	4
Aetna, Oklahoma	2,709	29	5	542	39
Colorado Medical Service	2,496	30	10	250	55
Travelers, Mississippi	2,324	31	2	1,162	18
Aetna, Oregon	2,266	32	5	453	42
Aetna, Arizona	2,152	33	6	359	48

TABLE 6-5 (continued)

Carrier	1 Population (000)	2 Rank	Number of Localities 2/	4 Average Population Per Locality (000) (1) ÷ (3)	5 Rank
Travelers, Minnesota	2,064	34	1	2,064	8
Arkansas Blue Cross/Blue Shield	2,061	35	5	412	43
Group Health Incorporated	1,963	36	1	1,963	11
Minnesota Medical Service	1,854	37	3	618	35
Kansas Physicians Service	1,852	38	1	1,852	12
Nationwide Mutual, West Virginia	1,791	39	5	358	49
Blue Shield of Kansas City, Missouri	1,745	40	6	291	54
Blue Shield of Western New York	1,602	41	1	1,602	14
Mutual of Omaha, Nebraska	1,545	42	3	515	40
New Hampshire - Vermont Physicians Service	1,278	43	2	639	33
Utah Blue Shield	1,174	44	1	1,174	17
Equitable, New Mexico	1,122	45	2	561	38
Union Mutual, Maine	1,047	46	3	349	52
Surgical Care Milwaukee	1,034	47	1	1,034	21
Genesee Valley Medical Service, New York	982	48	1	982	23
Rhode Island Medical Service	937	49	5	187	57
Aetna, Hawaii	847	50	4	212	56

TABLE 6-5 (continued)

Carrier	1 Population (000)	2 Rank	3 Number of Localities 2/	4 Average Population Per Locality (000) (1) ÷ (3)	5 Rank
Equitable, Idaho	799	51	2	399	44
Montana Physicians Service	735	52	1	735	30
South Dakota Medical Service	683	53	1	683	32
North Dakota Physicians Service	637	54	1	637	34
Aetna, Nevada	573	55	4	143	58
Delaware Blue Cross/Blue Shield	573	56	1	573	37
Equitable, Wyoming	359	57	1	359	47
Aetna, Alaska	337	58	1	337	53
Total	211,374		272		

1/ Area Resource File, Version 3

2/ Total number of localities differs from that in Table 12 in that there are eight localities under locality 24 in California.

TABLE 6-6

Distribution of Carriers By 1974 Population in Carrier Territory [1/]

Population (000)	Number of Carriers	Percent of Carriers
0 - 999	11	19.0%
1,000 - 1,999	12	20.7
2,000 - 2,999	11	19.0
3,000 - 3,999	8	13.8
4,000 - 4,999	3	5.2
5,000 and over	13	22.4
Total	58	100.0

1/ Area Resource File, Version 3

TABLE 6-7

Number of Localities By Population Size Group

Population Size Group (000)	Localities Number	Localities Percent	Cumulative Percent
< 100	31	11.7%	11.7%
100 - 199	27	10.2	21.9
200 - 299	23	8.7	30.6
300 - 399	35	13.2	43.8
400 - 499	30	11.3	55.1
500 - 599	7	2.6	57.7
600 - 699	18	6.8	64.5
700 - 799	14	5.3	69.8
800 - 899	5	1.9	71.7
900 - 999	8	3.0	74.7
1,000 - 1,999	49	18.5	93.2
2,000 - 2,999	9	3.4	96.6
3,000 - 3,999	3	1.2	97.8
4,000 - 4,999	3	1.1	98.9
5,000 and over	3	1.1	100.0
Total	265	100.0	

Population from 1974 census estimates (Area Resource File 6 May, 1977)
Localities from 1975 Medicare Reasonable Charge Directory, with adjustments.

TABLE 6-8

Locality Population Measures By Carrier, 1974 Census Estimates
(Mean, Minimum and Maximum)

	Carrier	Number of Localities	Population Measures (000) Mean	Minimum	Maximum
01	Blue Cross/Blue Shield of Alabama	6	596	396	1,119
02	Arkansas, Blue Cross / Blue Shield	5	412	254	617
03	California Physicians Service	21 [a.]	747	271	1,672
04	Colorado Medical Service	10	249	41	1,401
05	Delaware Blue Cross, Blue Shield	1	573	---	---
06	Medical Service of Washington, D.C.	1	2,773	---	---
07	Blue Shield, Florida	4	2,023	1,210	4,155
08	Illinois Medical Service	1	5,372		
09	Mutual Medical Service, Indiana	4	1,333	766	1,795
10	Iowa Medical Service	8	357	74	479
11	Blue Shield of Kansas City, Missouri	6	291	86	648
12	Kansas Physicians Service	1	1,852	---	---
13	Maryland Blue Shield	3	951	308	2,140
14	Massachusetts Blue Shield	2	2,900	653	5,147
15	Minnesota Medical Service	3	618	71	1,096
16	Michigan Medical Service	4	2,275	321	4,418
17	Montana Physicians Service	1	735	---	---
18	New Hampshire-Vermont Physicians Service	2	639	470	807
19	Genesee Valley Medical Service, Inc.	1	983	---	---
20	Blue Cross/Blue Shield, Greater New York	5	2,049	140	5,045

TABLE 6-8 (continued)

Locality Population Measures By Carrier, 1974 Census Estimates
(Mean, Minimum and Maximum)

	Carrier	Number of Localities		Population Measures (000) Mean	Minimum	Maximum
21	Blue Shield Western New York	1		1,602	---	---
22	North Dakota Physicians Service	1		637	---	---
23	Pennsylvania Blue Shield	4		2,959	2,065	3,963
24	Rhode Island Medical Service Physician Service	5	b.	187	46	250
25	Blue Shield South Carolina	3		928	731	1,155
26	South Dakota Medical Service	1		683	---	---
27	Group Medical and Surgical Service, Texas	32		377	56	1,900
28	Utah Blue Shield	1		1,174	---	---
29	Washington Physicians Service	4		869	108	1,833
30	Surgical Care (Milwaukee) Wisconsin Blue Shield	1		1,034	---	---
31	Wisconsin Physician Service	10		353	150	689
32	Aetna, Alaska	1		337	---	---
33	Aetna, Arizona	6		359	49	1,172
34	Aetna, Hawaii	4		212	32	691
35	Aetna, Nevada	4		143	26	320
36	Aetna, Oklahoma	5		541	201	748
37	Aetna, Oregon	5		453	110	930
38	Connecticut General	4		772	453	1,085
39	Continental Casualty Illinois	15		384	132	1,476
41	Equitable Idaho	2		399	186	613

TABLE 6-8 (continued)

Locality Population Measures By Carrier, 1974 Census Estimates
(Mean, Minimum and Maximum)

	Carrier	Number of Localities	Population Measures (000) Mean	Minimum	Maximum
42	Equitable New Mexico	2	561	433	688
43	Equitable Tennessee	5	826	497	1,130
44	Equitable Wyoming	1	359	---	---
45	General American Life Missouri	3	1,150	680	1,611
46	Group Health Insurance (New York)	1	1,963	---	---
47	Metropolitan Life Insurance Kentucky	3	1,119	628	1,836
48	Metropolitan Life Insurance New York	2	1,660	1,602	1,719
49	Mutual of Omaha-Nebraska	3	515	363	602
50	Nationwide Mutual Insurance-Ohio	15	714	155	2,427
51	Nationwide Mutual Insurance-West Virginia	5	358	135	465
53	Pan American Life Insurance Louisiana	8	470	121	1,480
54	Prudential Georgia	4	1,220	543	1,775
55	Prudential New Jersey	3	2,443	1,117	4,775
56	Prudential North Carolina	2	2,681	1,508	3,854
57	Travelers, Minnesota	1	2,064	---	---
58	Travelers, Mississippi	2	1,162	720	1,604
59	Travelers, Virginia	4	1,024	599	1,348
60	Union Mutual Life Insurance Maine	3	349	320	407

a. Carrier 03 "California Physicians Service" locality 24 comprises 8 localities
b. Carrier 24 "Rhode Island Medical Service" locality 05 comprises 3 localities

TABLE 6-9

Distribution of Localities and Carriers By 1974 Average Population Per Locality [1/]

Number of Localities	Average Population Per Locality (Millions) ≤.25	.25 -.49	.5 -.9	1 - 1.9	2+	Total	Percent of Carriers
1		2	5	5	3	15	25.9%
2-3		2	6	4	3	15	25.9
4-5	3	3	4	3	4	16	27.6
6+	1	7	3			12	20.7
Total	4	14	18	12	10	58	100.0

1/ Area Resource File, Version 3

TABLE 6-10

Medicare Carrier Distribution by Number of Localities

Number of Localities	Number of Carriers	Percent	Minimum Population	Maximum Population
			(000)	
Total 265	58	100.0%	26	5,372
1	15	25.9	337	5,372
2	7	12.1	470	5,147
3	8	13.8	71	4,775
4	10	17.3	26	4,418
5	7	12.1	46	5,045
6	3	5.2	49	1,172
8	2	3.4	74	1,480
10	2	3.4	41	1,401
15	2	3.4	132	2,427
21	1	1.7	271	1,672
32	1	1.7	56	1,900

TABLE 6-11

Distribution of Carriers by 1974 Average Population Per Locality 1/

Population (000)	Number of Carriers	Percent of Carriers
under 250	4	6.9%
250 - 499	14	24.1
500 - 999	18	31.0
1,000 - 1,999	12	20.7
2,000 - 4,999	9	15.5
5,000 and over	1	1.7
Total	58	100.0

1/ Derived from Area Resource File, Version 3

TABLE 6-12

Carrier and Locality 1974 Population Estimates for Multi-Carrier States[a]

State	(1) Carrier	(2) Population (000)	(3) Carrier Percent of Population	(4) No. of Localities	Average Population per Locality (2 ÷ 4) (000)
Illinois		11,131	100.0		
	Illinois Medical Service	5,372	48.3	1	5,372
	Continental Casualty	5,759	51.7	15	384
Minnesota		3,917	100.0		
	Travelers, Minnesota	2,064	52.7	1	2,064
	BS of Minnesota	1,854	47.3	3	618
Missouri		5,195	100.0		
	BS of Kansas City	1,745	33.6	6	291
	General American Life	3,451	66.4	3	1,150
New York		18,111	100.0		
	BS of Greater New York	10,243	56.6	5	2,049
	GHI	1,963	10.8	1	1,963
	BS of Western New York	1,602	8.8	1	1,602
	Genesee Valley Medical Service	982	5.4	1	982
	Metropolitan Life	3,321	18.3	2	1,660

[a] Area Resource File, Version 3.

TABLE 6-12 (continued)

Carrier and Locality 1974 Population Estimates for Multi-Carrier States (cont'd)[a]

State	(1) Carrier	(2) Population (000)	(3) Carrier Percent of Population	(4) No. of Localities	Average Population per Locality (2 ÷ 4) (000)
Wisconsin		4,566	100.0		
	Surgical Care, Milwaukee	1,034	22.6	1	1,034
	Wisconsin Physician Service	3,532	77.4	10	353

[a] Area Resource File, Version 3.

TABLE 6-13

1974 Locality Population by Medicare Region

Region	(1) Population Number (000)	(2) As Percent of US Total	(3) Number of Localities	(4) * Average Population Per Locality (1 ÷ 3)	(5) Average Region Population Per Locality As A Percent of Average U.S. Population Per Locality (4) ÷ 774
I Boston	12,150	5.7	16	759	98.1
II New York	25,441	12.0	13	1,957	252.8
III Philadelphia	23,923	11.3	18	1,329	171.7
IV Atlanta	34,506	16.3	29	1,190	153.7
V Chicago	44,760	21.2	54	829	107.1
VI Dallas	21,705	10.3	52	417	53.9
VII Kansas City	11,446	5.4	21	545	70.4
VIII Denver	6,084	2.9	15	406	52.4
IX San Francisco	24,480	11.6	42	583	75.3
X Seattle	6,877	3.3	12	573	74.0
US TOTAL	211,374	100.0	272	774	100.0

Source: Area Resource File, Version 3.

* Total number of localities differs from that in Table 12 in that there are eight localities under locality 24 in California.

APPENDIX 6-A

IDENTICAL MEMORANDUM NO. 75-53 -- EVALUATION OF REASONABLE CHARGE PROCEDURES

MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
SOCIAL SECURITY ADMINISTRATION

HI 21-7-5

TO : All Regional Representatives, HI

DATE: April 1975

REFER TO: IHI-432

FROM : Director, Bureau of Health Insurance

SUBJECT: Identical Memorandum No. 75-53--Evaluation of Reasonable Charge Procedures

Over the past 3 years, a great deal of emphasis has been placed on evaluating reasonable charge methodology. One of the principle reasons for this emphasis is that reasonable charge determinations control the entire level of program payments made under the Part B program. (Currently, these payments amount to nearly $3 billion annually.) Therefore, in order to insure proper carrier compliance in implementing the reasonable charge provisions, several different approaches of evaluating and ranking carrier reasonable charge methodology have been undertaken. One such approach utilized hard copy claims which were processed through a carrier's system to develop a data base. Upon completion of this processing the data base would be used to develop reasonable, customary and area prevailing charges. The charges developed would then be reviewed by regional office personnel to insure accuracy. Another approach was to prepare a data base on magnetic tape for the carrier to process through its screens. These results were then compared to microfilmed predetermined results and the resulting errors measured.

Each of the methods described above had its shortcomings. The feedback from the regional offices indicated the hard copy claim procedure was time consuming and did not lend itself to development of predetermined results for all carriers. In addition, the magnetic tape data base approach required that carriers convert the data base to their own EDP formats before processing.

For the above reasons, and in order to incorporate maximum input into the reasonable charge evaluation program, a work group was established in September 1974. Representatives from a number of regional offices, together with Program Policy, Division of Contractor Operations, and the Division of Systems have had a number of meetings in central office on this subject. What has evolved from these discussions and collective recommendations is a national uniform approach to evaluating carrier reasonable charge compliance. It has been decided that the magnetic tape testing method will not be used. The new method makes use of a number of guides and questionnaires as shown in the enclosed attachments.

Distribution--6 copies per RO; 1 copy per BHI staff, Office, Division, Program Branch, and Resident Representative.

Attachment I is the National Reasonable Charge Profile Development Guide which is to be used by the regional office staff in developing the data required for evaluating carriers. Attachment II is the National Reasonable Charge Evaluation Requirements which will be applied to the data developed by Attachment I in order to arrive at a numerical rating for each carrier. Some of the items covered in the Guide are intended as fact-finding, for future policy information, and will not necessarily be reflected in the Requirements. An initial reporting requirement has been established for submittal of the evaluation Requirements for each carrier not later than September 30, 1975. It is not necessary, at this time, to submit the information developed through the Guide, however, fully documented copies of the Guide should be submitted by December 31, 1975.

In completing Attachment II and arriving at a numerical rating for the carrier, partial point credit may be given if the factor is partially met. The regional office is free to use its discretion in assigning partial credit. A remarks section is left after each factor on the Requirements to allow for explaining partial credit, no credit, and/or anticipated implementation date.

This new procedure is to be followed in reviewing the July 1975, update of reasonable charge screens, prior to implementation by the carriers. Data developed in reviewing the reasonable charge screens may prove to be of value in completing the Reasonable Charge portion of the ACER. In order that we may evaluate the effectiveness of this approach, we request that all regional offices furnish their comments and recommendations at the time of submission of the Guide. Upon receipt and review of all comments and recommendations, a decision will be made concerning the future year reviews and if appropriate this procedure may become an integral part of the annual review process.

The Requirements should be completed and submitted, along with copies of regional office letters approving the reasonable charge screens, to arrive not later than September 30, 1975, to:

Social Security Administration
Attention: Division of Contractor Operations
Part B Operations Analysis Section
6401 Security Boulevard
Room 2-P-5 East Building
Baltimore, Maryland 21235

The same address will be used for submission of the Guides.

Any questions concerning this memorandum should be directed to Mr. James Barnett, 301-594-8518, or Mr. John Taylor, 301-594-3149.

Attachments 2

Thomas M. Tierney

National Reasonable Charge Profile Development Guide

A. Preparing the Data for Profile Development

I. Identification of Data Base

a. What is the universe of claims from which the data base is drawn? E.g., claims processed during 1/1/74-3/31/75 with date of service between 1/1/74-12/31/74.

b. Does the carrier retain profile data for the required time (See IL 74-17)?

II. a. What data is excluded from this data base (history)? Furnish rationale.

1. teaching setting claims
2. provider based physician claims
3. lump coded items
4. charges made under "unusual circumstances"
*5. token and/or extreme charges - what parameters are used to exclude these charges
6. duplicate charges
7. obviously miscoded charges, e.g., radiological charges by a chiropractor
8. charges to Medicare ineligible patients

* These may be excluded during customary charge profiling. If so, please note this and describe parameters.

b. 1. Does the carrier develop a print out listing all excluded data? How is it used?

2. What percent of the total data base is excluded?

III. a. What other data is included with the Medicare data?

1. private business

2. FEHBP

3. title XIX

4. other (describe)

b. Is this data merged or "compared" with the Medicare data?

c. What percent of the data base is the non-Medicare data?

d. Is any of this data available and not used? If yes, explain.

e. What is the base year of the data sources used?

IV. Is carriers' coding structure sufficiently refined to capture actual charge data for the range of services/items billed? (As opposed to a strong reliance on miscellaneous or "catch-all" coding.)

a. physician

1. medicine

2. surgery

3. radiology

4. pathology

5. consultants

NOTE: How many changes to procedure codes have been made? Explain.

b. non-physician

1. ambulance

2. DME

a) rented

b) purchase

3. braces and prosthetics

4. independent labs

V. Does the carrier adjust history to correct miscoded data, e.g., after a review or hearing?

B. Customary Charge Screens

I. What parameters has the carrier selected to arrive at a customary, e.g., minimum number of services, frequency, and/or specified number of like charges?

II. What parameters have been selected for calculation of conversion factors? How is the C.F. calculated?

III. Identify those types of services listed below for which actual charge history has been used to calculate the customary according to the parameters selected by the carrier.

Type of Service	Profiled	Not Profiled
Medicine		
Surgery		
Radiology		
Laboratory		
Anesthesiology		
Ambulance		
Podiatry		
DME (Purchase)		
DME (Rental)		
Prosthetic		
Injections		
Physical Therapy		
Chiropractic		
Other (List)		

For those customaries not based on actual charge history, please describe in detail the rationale supporting the pricing methodology that is used, e.g., explain to what degree the carrier is adhering to SSA instructions regarding injections, if price lists used for DME, are they current, weighted, and in what manner?

IV. Does the carrier properly compute the customary charge based on both even and odd number of services? Furnish examples of computation. On customaries calculated from an even number of services the median should be established at the next highest charge.

V. Are customaries, which do not meet the parameters selected by the carrier, identified and retained for later use? Yes ___ No ___. If yes, how are the used?

VI. Does the carrier correct invalid customary charges before the prevailing charges are calculated from the customaries? Explain.

VII. Except for 25¢ and 75¢ amounts, are the customaries rounded properly to the nearest 10¢?

VIII. Does the carriers system allow the combination of profile data on multiple physicians to form a group profile? If yes, explain the methodology used.

IX. Does the carrier require at least three months base year experience before developing a customary charge profile? How is this controlled?

C. Computing the Area Prevailing Charges

I. Describe the geographic area (locality) breakdown used by the carrier for all services. Does this breakdown meet the requirements of § 6706.1 of the Patt B Intermediary Manual?

II. Describe the provider specialty grouping for computing area prevailing charges. Are different specialty categories used which are not in § 6586 of the Part B Intermediary Manual? List any specialties that are grouped geographically in a manner different from the normal geographic breakdown. Explain the reason for the difference. For example, some specialties may be grouped state-wide rather than by the normal geographic area. Are these acceptable?

III. Does the carrier have a minimum number of customary charge records and/or services that are necessary before a prevailing charge will be computed? If yes, what is that minimum?

IV. Verify the calculation of area prevailing charges at both the 50th and 75th percentile. Verify that customary charge records are properly weighted (by number of services) and that the 50th and 75th percentile is properly selected. (For example, all fractions are rounded up.) Compare the manual calculations to the carrier's computer prevailing charges. Explain any differences.

V. Are prevailing charges rounded? If yes, explain.

VI. Does the carrier correct invalid prevailing charges before they are used in pricing claims? If yes, explain the procedure.

VII. Does the carrier develop prevailing charge/50th percentile conversion factors? Describe methodology.

D. Reasonable Charge Pricing and Reporting

I. a. Describe the pricing sequence for profiled services.

1. In the absence of a customary, describe the pricing sequence.

2. In the absence of a prevailing, describe the pricing sequence.

b. Describe the pricing method for non-profiled services, e.g., price list areas.

1. In the absence of a customary, describe the pricing sequence.

2. In the absence of a prevailing, describe the pricing sequence.

II. Describe the controls employed by the carrier for making only authorized changes to profiles. Are all changes documented? Furnish detail on number and reason for such changes.

III. What controls does the carrier have for preventing multiple profiles for the same physician/supplier in the same locality?

IV. a. What types of services listed in item B. III are automatically subject to cut and pay by the computer? Explain the carriers rationale for any profiled reasonable charges which are not subject to automated cut and pay.

b. Does the carrier have safeguards to identify and reject inordinate extremes in billed charges to permit manual scrutiny? Describe.

V. What types of services listed in B. III are manually priced by the carrier? Explain the rationale for doing so.

VI. How does the carrier insure proper reporting of reasonable charge reductions? What RO techniques are used to validate the accuracy of the data on the SSA-1565?

VII. Does the carrier compare the Medicare customary and/or prevailing charge screens to any other screens in order to determine comparability limitation? Explain fully.

VIII. How does the carrier price claims submitted by new man in town?

IX. How does the carrier reimburse an established physician who has no customary charges?

X. Does the carrier reimburse nursing home visits in accordance with Section 6809 Part B Manual? If not, explain.

E. I. When were the updated screens implemented?

II. What claims are first processed under the new screens? Describe.

III. Has the carrier established satisfactory reasonable charge printouts of their screens for disclosure purposes?

IV. Describe any unique methodology (not addressed by this document) utilized by the carrier in developing his screens.

Attachment II

EVALUATION QUESTIONNAIRE

Region:
Carrier:

NATIONAL REASONABLE CHARGE EVALUATION REQUIREMENTS

Maximum Point Value		Yes	No	Regional Office Evaluation Points
10	Do the carriers' "locality" delineations meet the intent of Part B Manual 6706.1 and SSA Regulation 405.505? REMARKS:			
4	In order to insure as broad a data base as possible, does the carrier use available non-Medicare data base mix? For example, merging private program data, FEHBP, CHAMPUS, and Title XIX when possible--IL 71-7. REMARKS:			
1	Does the carrier require at least 3 months base year experience for the new physician before establishing a customary charge profile? (Part B Manual 6704.5B) REMARKS:			
1	Does the carrier correctly calculate the "new doctor in town" screen using the 50th percentile of the weighted customary charges -- IL 71-7? (Part B Manual 6704.5B) REMARKS:			

Maximum Point Value		Yes	No	Regional Office Evaluation Points
2	Does the carrier price "new man in town" claims at the lower of the actual charge or the 50th percentile in their ongoing claims process? (Part B Manual 6704.5B) REMARKS:			
10	Specialty charge screens have been established which are responsive to the actual charge patterns. If not, is the carrier's position documented by scientific studies clearly supporting their position, Part B Manual 6706.3 and SSA Regulations 405.504b? REMARKS:			
10	Does the carrier properly calculate the customary screens? Select examples based on both even and odd number of services. Where even number of services exist, verify that the median is established at the next highest charge. (IL 71-7B) REMARKS:			
1	Except for 25¢ and 75¢ amounts, does the carrier round customaries to the nearest 10¢ (IL 71-7D)? REMARKS:			

Maximum Point Value		Yes	No	Regional Office Evaluation Points
10	Does the carrier properly calculate the prevailing charge screens using the weighted (by number of services) customary charges? Base your decision on actual calculations of the 75th and 50th percentile made onsite. Compare the manual calculations to the carrier's computer prevailing charges. (IL 71-7d)? REMARKS:			
3	Did the carrier implement its updated physician screens within 31 days after July 1, 1975? Give dates. (IL 73-14) (Do not deduct points if delay is due to new economic index provisions.) REMARKS:			
3	Did the carrier implement its non-physician screens within 31 days after July 1, 1975? If possible, give dates and type of screen delayed, and expected date of implementation. (IL 73-14) REMARKS			
2	Does the carrier reimburse physician nursing home visits in accordance with Section 6809? REMARKS:			

Maximum Point Value		Yes	No	Regional Office Evaluation Points
1	Does the carrier retain profile data for the required time period? (IL 74-17) REMARKS:			
1	Does the carrier employ proper controls over changes made to the reasonable charge screens? Are all changes documented? Furnish details on number and reasons for such changes. (IL 71-7 and Part B Manual 6399 Section 3.3) REMARKS:			
1	Does the carrier, in its claims process, have safeguards to identify and reject inordinate extremes in billed charges to permit manual scrutiny? (Part B Manual 6399, Section 3.2) REMARKS:			
10	Does the carrier price claims correctly at the actual, customary, or prevailing charge? (As demonstrated by the Carrier Systems Test No. 40 per IM 74-146 and the Quality Assurance Program Handbook, Chapter I) REMARKS:			
1	Does the carrier properly report reasonable charge reductions on the monthly SSA-1565 workload report form? (Part B Manual 6399, Section 3.2) REMARKS:			

Maximum Point Value		Yes	No	Regional Office Evaluation Points
2	Has the carrier established satisfactory reasonable charge printouts for disclosure purposes -- IL 74-11 REMARKS:			
3	Has the carrier established an ongoing, effective working relationship with the appropriate intermediary(s) permitting timely exchange of information? (Part B Manual 6862.1) REMARKS:			
4	Does the carrier act upon and make proper and timely use of information received from the intermediary(s) in processing payments to Provider Based Physicians? (Part B Manual 6870.2) REMARKS:			
1	Carrier has identified all teaching hospitals and teaching physicians within their service area. REMARKS:			
1	Carrier has regularly scheduled medical record reviews in accordance with IL 372. REMARKS:			

Maximum Point Value		Yes	No	Regional Office Evaluation Points
1	Does the carrier properly reimburse teaching services in accordance with IL 372? REMARKS:			
1	Is there adequate liaison with the appropriate Part A intermediary to assure, e.g., that duplicate reimbursement does not occur? REMARKS:			

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APPENDIX 6-B

NON-MEDICARE CLAIMS DATA FOR MERGER OR COMPARISON

Introduction

The use of non-Medicare data in merger or comparison with Medicare claims is expected to serve as a check on Medicare prices. The availability of such data, however, varies from carrier to carrier depending on its direct business and the other programs in which it serves as fiscal agent for government.

The following pages review a variety of program features and statistics bearing on the likelihood and utility of having non-Medicare data. The programs that are relevant include the Federal employees' health benefit program FEHBP), Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), and Medicaid. In addition, private group business is considered.

Federal Employees Data

The FEHBP carriers with Medicare Part B carrier status include Aetna, Blue Cross/Blue Shield, GHI, Hawaii Medical Service Association (HMSA), and Washington Physicians Service.[1c] * A total of 1,932,882 Federal employees have Blue Cross/Blue Shield, and local Blue Shield plans typically have Federal employee business.[1b] Of these plans, Pennsylvania Blue Shield is apparently the largest with 98,343 subscriber enrollees.[1a] (The New York State total is larger but there is more than one Blue Shield plan.) Aetna's total FEHBP enrollment was 472,461 (employees and annuitants) on December 31, 1976, the same date as for the Blue figures above. In Aetna's enrollment there is wide geographic distribution; in the states where Aetna is a Part B carrier the numbers[1a] involved are:

Oklahoma	16,435	Nevada	4,466
Arizona	8,621	Alaska	4,985
Hawaii	1,741	Oregon	8,958

For both governmentwide plans, the Blue plan and Aetna, numbers mentioned here must be augmented by dependents in order to estimate the total covered population. Retirees are classified according to whether they have coverage through the Uniform Plan, any qualified private health plan, or Medicare Part B. On June 30th, 1976 there were 153,240 retired enrollees of whom 31.2% had Medicare Part B and 33.8% had the Uniform Plan. Another 23.2% had Blue Cross - Blue Shield, and the rest had other coverage.[1c] The numbers, after allowance is made for the Medicare enrollees, amount to about 5% of the younger FEGBP enrollees.

The probabilities of data merger that influence customary charge profiles depend on benefit specification for physicians' services. Brochures of FEHBP for 1978 carriers indicate the following benefits:

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* Reference numbered 1a through 11e refer to list on p. 19.

Government-wide Indemnity Benefit Plan (Aetna)

Professional services of doctors, including surgery and consultations, and home, office, and hospital visits. X-ray and laboratory tests and radiation therapy are included. Only service for diagnosis or treatment of pregnancy, illness or injury are covered with two exceptions: voluntary sterilization and improvement of malformed body member. There is a $75 deductible under both high and low options and the benefit is 80% of expense (75% under low option) exceeding the deductible. A 3-month carryover of expense is permitted into the next calendar year.

Government-wide Service Benefit Plan (Blue Cross/Blue Shield)

Under basic coverage, surgical services including normal pre- and post-operative care by the surgeon are covered, also in-hospital physician care up to 365 days (90 days-low option), anesthesia, and in-hospital consultations.

Home visits are paid for persons cared for under home health care benefits and following a plan of treatment, restricted to patients discharged from a hospital. Office care appears to be limited to surgical cases, chemotherapy for cancer, endoscopy and maternity.

Under supplemental benefits, UCR charges for medically necessary charges in or out of a hospital are covered, with a $100 deductible ($200-low option) and 80% (75%) of charges covered in excess of the deductible. However, subscribers enrolled in Medicare Part B are exempt from the deductible and coinsurance.

GHI Family Doctor Plan

All necessary surgery, anesthesia administration, and medical care are covered in hospital. Radiation therapy is also covered as well as one specialty consultation in each covered field. A second surgical consultation

is provided for elective (non-emergency) surgery. Outside of hospitals, office and home visits, preventive care, surgery, and specialist consultations are included. The plan pays $10 for office visits and $15 for home visits but participating doctors may charge up to $20 for the latter. $20-35 is payable for consultations. For care in a hospital, participating doctors accept GHI's allowance as payment in full. There are 9000 participating providers (physicians and others excluding hospitals).

Washington Physicians Service

Benefits include services of participating doctors in home, office, or hospital, not excluding preventive care. Specialist consultations and anesthesia administration are covered. Certain supplemental benefits apply after deductible. Non-participating doctors giving emergency care outside the service area are paid the same amount as would have been paid to a participating physician. There are over 3,000 participating physicians.

HMSA

Benefits for services needed for prevention or treatment of illness include payment in full for surgery and 80% of reasonable charges for home, office and hospital visits and for anesthesia. Radiotherapy is covered in full for malignancy and for 50% of reasonable charges for other conditions. Doctor visits in a hospital are limited to one per day and consultations to one per confinement. Routine checkups over age 1 year are limited to one per two years.

Major medical benefits are applicable to physician care in and out of hospital after a $100 deductible 80% of remaining covered charges is paid.

To summarize merger possibilities based on FEHBP:

1. The deductible under Aetna is slightly higher than under Medicare, and therefore fewer instances of services may flow through the claims system. But probably many patients not meeting the deductible do send in claims in order to accumulate toward the value of the deductible.

2. Blue Cross does not cover non-surgical office care, except for chemotherapy and endoscopy, under basic benefits, but does cover it under supplemental benefits. Probably, as with Aetna, many patients not meeting the deductible are represented.

3. GHI covers services of doctors in and out of hospital. Specialist consultations actually received probably fall within the limits and are represented, but because of low allowances for regular visits, claims in the consultant category may be larger than they were in fact.

4. Washington Physicians Service covers all types of services and the limits on number of visits are broad enough for good representation.

5. HMSA covers all types of services. Its specialty consultations are more limited than GHI.

6. Since most Federal employees carry high option plans, FEHBP claim price levels are likely to resemble those of other private insurance data.

While Medicare coverage is limited to care of illness, 1973 data[6] show 36-48% of persons 65 and over as having received eye examinations, breast examinations, EKGs, etc. within the year and an additional 24-33% in an interval of 1-2 years. Some of these services were doubtless received during visits for illness. This would also be true for persons at all ages with private insurance.

The omission of medical office visits in Blue Cross/Blue Shield basic coverage suggests that the value of data merger would be substantially affected by the specific procedure involved.

These limitations are to a substantial degree also applicable to the non-Federal business of the carriers providing the governmentwide plans since the Federal employees contract tends to be a "best offering".

For Blue Shield plans, states such as Illinois where there are no participating physicians held to a fee schedule as payment in full could not expect much downward effect from merger. In other states, such as Alabama, where UCR (usual customary and reasonable) charges are subject to review, merger has more potential for reducing Medicare prevailings.

CHAMPUS

A number of Blue Shield plans that are Part B carriers serve as CHAMPUS carriers, and Mutual of Omaha is the CHAMPUS payer for six different states. (There are also 12 CHAMPUS carriers that do not serve under Medicare Part B.) CHAMPUS fee levels are likely to be close to private market charges.

Private Group Business

Group enrollment accounts for 82.4% of all insurance company health business and a similar proportion of the Blues' business.[a/] [10] The broad probabilities of having private group business to merge are suggested by figures on the distribution of worker surgical and medical benefits by type of carrier. (Table 6-14) Surgical benefits are provided through commercial carriers for 61.1% of workers and through Blues for 28.1%. Corresponding percentages for in-hospital medical benefits are 54.0% and 33.0%.

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a/ Figures are not published for Blue Shield but the group percentage for Blue Cross is 86.4%.

Table 6-14

Type of Surgical and Medical Benefits by Insurer Type

	Total	Commercial	Blue Shield	Self-Insured or Independent
Surgical				
Number of workers with surgical benefits[a/]	24.2	14.9	6.8	2.5
Type of surgical benefit	100%	100%	100%	100%
Cash scheduled allowances	65	77	40	66
Service benefit	3	0	0	25
Reasonable and customary cost	30	22	57	6
Major medical benefit	2	1	3	3
Medical				
Number of workers with medical benefits[a/]	20.0	10.8	6.6	2.5
In-hospital medical benefit per treatment	100%	100 %	100%	100%
$1-4	9	10	7	8
5	23	32	10	17
6-9	21	28	10	22
10+	14	8	25	9
Service benefit	3	0	0	25
Reasonable and customary cost	27	20	47	6
Major medical benefit	4	2		14

a/ In millions.

Source: 7

However, these proportions vary by state, so that the probability of mergeable data involves state-by-state analysis. The 5 top health insurance carriers in the commercial field are Part B carriers in 16 states, so that the likelihood of substantial volume is present. This is less applicable to smaller carriers (not among the first 25 carriers) in 6 states.

National ranks of commercial carriers in terms of all health insurance business in 1974[5] are shown below along with the states for which they serve under Part B. (Enrollment figures for these carriers by state are not available.)

Table 6-15

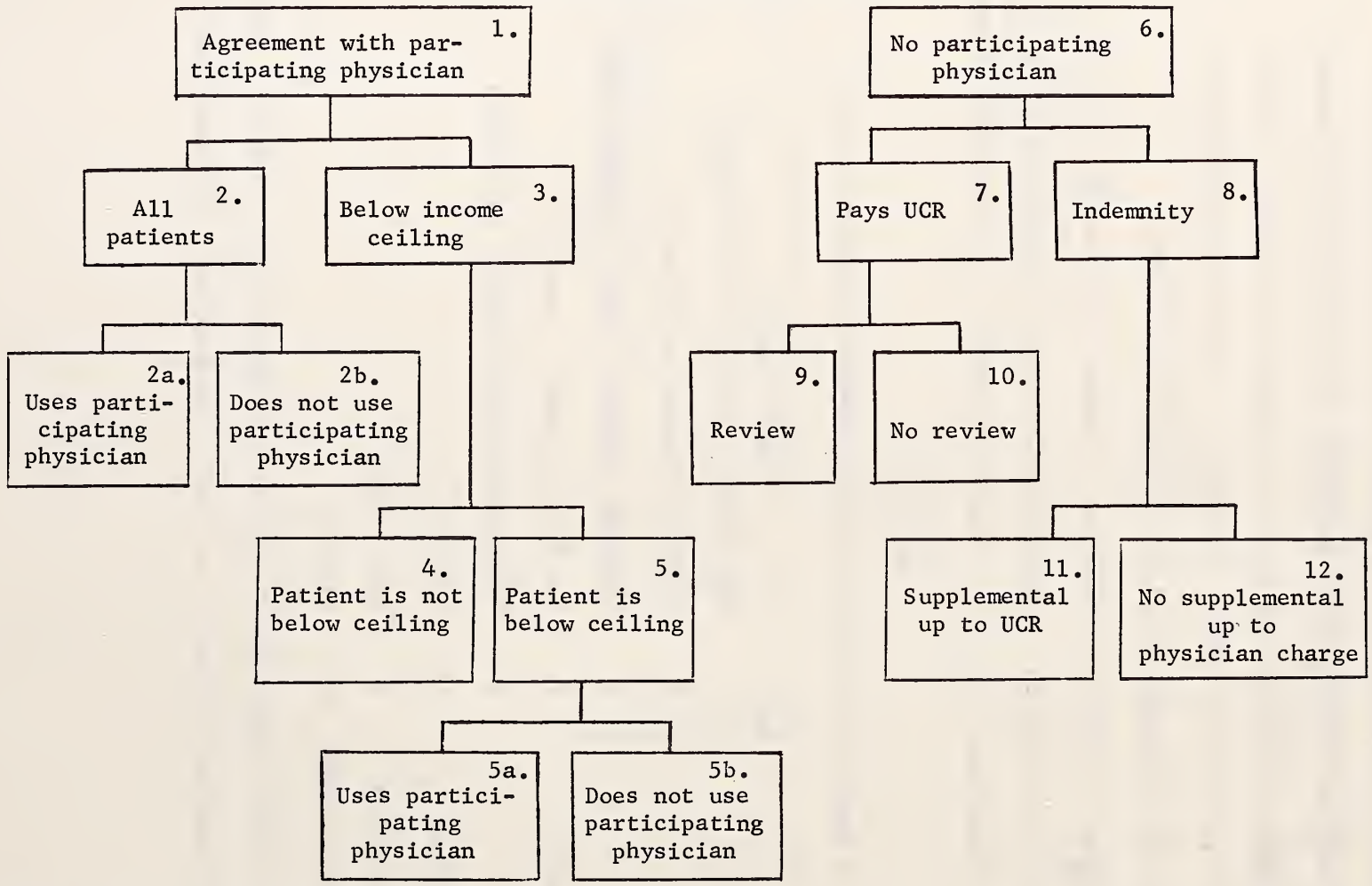
Ranks of Carriers by Health Insurance Business

Carrier	Rank	Part B Areas
Prudential	1	New Jersey, Georgia, North Carolina
Travelers	2	Virginia, Minnesota (in part)
Aetna	3	Oklahoma, Arizona, Hawaii, Alaska, Oregon
Metropolitan	4	New York (in part), Kentucky
Equitable	5	Tennessee, Idaho, Wyoming, New Mexico
Mutual of Omaha	6	Nebraska
Connecticut General	7	Connecticut
General American Life	27	Missouri

Below 30th in rank: Union Mutual (Maine), Nationwide (West Virginia, Ohio), Continental Casualty (Illinois - in part), Pan American Life (Louisiana)

Figure 6-1

Alternative Payment Bases
Blue Cross/Blue Shield Service Benefit Plan


1. Agreement with participating physician
2. All patients
3. Below income ceiling
2a. Uses participating physician
2b. Does not use participating physician
4. Patient is not below ceiling
5. Patient is below ceiling
5a. Uses participating physician
5b. Does not use participating physician
6. No participating physician
7. Pays UCR
8. Indemnity
9. Review
10. No review
11. Supplemental up to UCR
12. No supplemental up to physician charge

Extra charge to patient can occur in cases where: 2b) patient **does** not use participating physician; 4) patient's income is not below ceiling; 5b) patient's income is below ceiling but he does not use participating physician; 10) there is no UCR review of non-participating physician; 12) there is no supplemental benefit up to the non-participating physician's fee; and 9) when there is UCR review of non-participating physician but there is prior agreement between patient and physician of a fee in excess of UCR. Extra charge may also be incurred if enforcement of policy is weak.

Medicaid

Fees for service to patients receiving Medicaid are another potential source of fee data with which Medicare charges could be merged.

Sixteen Medicaid fiscal agents are also Part B carriers. These Medicare carriers would have ready access to fees for physician services under Medicaid.

Table 6-16

Medicaid Fiscal Agents June 7, 1977[3]

California	Blue Shield	
Colorado	Colorado Medical Service	
Connecticut	Connecticut General	
Delaware	Blue Cross/Blue Shield	
Florida	Blue Cross/Blue Shield	(Claims for coinsurance and deductible for Medicare Part B)
Indiana	Blue Cross/Blue Shield	
Iowa	Blue Cross/Blue Shield	
Kansas	Blue Shield	
Louisiana	Pan American Life	
Massachusetts	Blue Cross/Blue Shield	
New Jersey	Prudential	
Pennsylvania	Blue Shield	(Inpatient physicians' services)
South Carolina	Blue Cross/Blue Shield	
Vermont	New Hampshire/Vermont Hospital Service	
Wisconsin	Wisconsin Physicians Service	
	Surgical Care	

An agent other than a Part B carrier is used for physician claims processing in: Alabama, Arkansas, Hawaii, Mississippi, Montana, Nevada, New Mexico, North Carolina, Tennessee, and Virginia. The remaining states handle Medicaid physician fees directly.

Table 6-17

Medicaid Recipients In States[a/] Using Part B Carriers As Medicaid Fiscal Agents As Ratio of Aged Population

	FY 1974 Medicaid Recipients (000)	Aged population 1970 (000)	Medicaid/ Aged Ratio
California	3713	1800	2.06
Colorado	144	188	.77
Connecticut	188	289	1.54
Delaware	48	44	1.09
Florida	351	985	.36
Iowa	126	350	.36
Kansas	143	265	.54
Louisiana	290	306	.95
Massachusetts	923	636	1.45
New Jersey	572	697	.82
North Dakota	25	66	.38
Pennsylvania	1531	1271	1.20
South Carolina	183	192	.95
Vermont	47	47	1.00
Wisconsin	333	471	.71
TOTAL	8429	7607	1.11

Source: 2, p. 76, 9.

a/ There are 8,429,000 Medicaid recipients in these states, or 38.3% of the total U.S. Medicaid population of 22,009,000.

It can be seen from Table 4 that for ten of the 15 states involved, the Medicaid/Medicare ratio is 3/4 or over if the aged population is taken as a gross measure of Medicare enrollment. The effect of data merger would be substantial in volume terms.

However, Medicaid fiscal agents use a variety of payment bases. Table . below lists the methods used in states where the Medicaid fiscal agent is also a Part B carrier. The low prices and fixed payment basis in some of the programs stand in the way of useful merging of Medicaid fee data with Medicare fees.

Table 6-18
Medicaid Payment Basis in States Where Medicaid Fiscal Agent is Part B Carrier

State	Payment Basis
California	Fee schedule
Colorado	Unit value
Connecticut	Customary and reasonable
Delaware	Usual and customary
Florida	Medicare method
Iowa	Medicare method
Kansas	UC with fixed minimum
Louisiana	Percent of allowable charge
Massachusetts	Fixed negotiated fee schedule
New Jersey	75th percentile of customaries
North Dakota	Reasonable up to maximum
Pennsylvania	Customary with maximum
South Carolina	Reasonable up to "upper limit"
Vermont	Medicare method
Wisconsin	Lowest of actual charge, reasonable charge or median charge for that doctor, or rate on Dec. 23, 1974.

Source: 2, p. 22.

Finally, Medicare and Medicaid physician fees for service to the elderly are, in fact, to a considerable extent, identical. In FY 1974 3,805,000 aged were Medicaid recipients out of a total of 22,009,000 recipients in the United States. Of these 3.8 million only 134,000 were in the five states that do not buy into supplementary medical insurance for their Medicaid recipients. These states are Alaska, Louisiana, Oregon, Puerto Rico, and Wyoming.[2] For the vast majority of aged recipients of Medicaid, therefore, physician fees are set by the Medicare fee determination process. The value of merging data would depend largely on the identity of procedures used by the aged and a younger population.

To sum up, many issues are involved in the merger of Medicaid physician fees with Medicare data. These include (1) accessibility of data (i.e., whether or not a Part B carrier is a Medicaid fiscal agent), (2) volume of Medicaid data, (3) fixed payment basis and low prices under Medicaid, and (4) degree of overlap of Medicare procedures and physician service to a younger population.

Summary

In all, 21 carriers have only private business claims to merge with Medicare data and 22 have one source in addition to Medicare. Seven carriers have two sources plus private business and ten have three sources (Table 6-19). All of the ten are Blue Shield plans. They include the plans of Massachusetts, Pennsylvania, Florida, South Carolina, Wisconsin, Iowa, and Kansas. Merger possibilities, as shown by these statistics and the foregoing review, vary both quantitatively and qualitatively by individual carrier and by carrier type.

California and Massachusetts use fee schedules. Four other states have a maximum, and Louisiana uses a percent of allowable charge. The distribution of submitted charges is by and large determined under the fixed fee method but how it looks under the other methods is not known. Hence the impact of the data merger is hard to predict, except for the general pressure for cost containment.

Merger of Medicare and Medicaid data also involves problems that stem from the fact that medical care for the aged involves significant differences from that utilized by a younger population. Many medical procedures are largely restricted to use by one or the other group, and the services that are common to both groups are utilized in different proportions. The following data concerning the distribution of physician services to the aged under Medicaid demonstrate this difficulty.

In FY73 11.2 million Medicaid recipients in 45 states received 63,000,000 physician visits, over 60% of them in offices and 23% in hospitals or other institutions.(4,) But the aged received 44.8% of their visits as in-patients and 44.5% in offices. The average number of doctor visits per recipient was 8.0 for the aged.(4,) There were 695,764 aged in-patients under Medicaid during the year out of 2.7 million at all ages; that, is 25.8% of in-patients under Medicaid were aged. At age 65 and over average length of stay in 19 selected states was 8 days, presumably generating doctor charges in proportion.(4,)

Age is the basis of eligibility for 18.3% of Medicaid recipients and the percent of total Medicaid payments going to those eligible by reason of age was 38.1%. However, when Medicaid expenditures are examined by type of service, only 4.4% of Medicaid expenditures for the aged were for physician services, while for all recipients this percentage was 10.8%.

Table 6-19

MERGEABLE DATA SOURCES

Code	Carrier Name	CHAMPUS Carrier [1]	Non-hospital Claims Paid [2]	Medicaid Fiscal Agent [3]	No. of Medicaid Recipients (000) [4]	FEHBP Business	No. of FEHBP Enrollees [5]	Rank by Volume of Private Health Insurance [6]
01	Blue Cross/Blue Shield, Alabama					Yes	46,381	
02	Blue Cross/Blue Shield, Arkansas	Yes	52,146			Yes	14,018	
03	California Physicians Service	Yes[a]	N.A.	Yes	3713	Yes	116,959	
04	Colorado Medical Service			Yes	144	Yes	35,757	
05	Blue Cross/Blue Shield, Delaware	Yes	5,311	Yes	48	Yes	4,334	
06	Medical Service, Washington, DC (Includes Maryland & Virginia)	Yes	178,780			Yes	433,511	
07	Blue Shield, Florida	Yes	242,399	Yes	351	Yes	59,207	
08	Illinois Medical Service					Yes	79,294	
09	Mutual Medical Service, Indiana					Yes	30,587	
10	Iowa Medical Service	Yes	15,887	Yes	126	Yes	16,418	
11	Blue Shield of Kansas City (Kansas and Missouri)		44,503 (MO)			Yes	17,174 (KAN)	
12	Kansas Physicians Service	Yes	30,556	Yes	143	Yes	48,896 (MO)	
13	Blue Shield, Maryland							
14	Blue Shield, Massachusetts	Yes[b]	86,530	Yes	923	Yes	61,918	
15	Minnesota Medical Service	Yes	27,391			Yes	16,027	
16	Michigan Medical Service	Yes	41,597			Yes	38,400	
17	Montana Physicians Service					Yes	5,655	
18	New Hampshire-Vermont Physicians Service			Yes	92	Yes	11,127	
19	Genesee Valley Medical Service					Yes		
20	Blue Cross/Blue Shield, Greater New York	Yes	82,400			Yes	100,448 (NY State)	
21	Blue Shield, Western New York					Yes		
22	North Dakota Physician Service	Yes	4,540	Yes	26	Yes	6,315	

Table 6-19 (continued)

MERGEABLE DATA SOURCES

Code	Carrier Name	CHAMPUS[1] Carrier	Non-hospital[2] Claims Paid	Medicaid[3] Fiscal Agent	No. of[4] Medicaid Recipients (000)	FEHBP Business	No. of[5] FEHBP Enrollees	Rank by Volume[6] of Private Health Insurance[c]
23	Blue Shield, Pennsylvania	Yes	59,215	Yes (IP only)	1531	Yes	98,343	
24	Rhode Island Medical Service					Yes	11,528	
25	Blue Shield of South Carolina	Yes	N.A.	Yes	183	Yes	26,051	
26	South Dakota Medical Service					Yes	6,668	
27	Comprehensive Medical & Surgical Service of Texas							
28	Blue Shield, Utah					Yes	31,866	
29	Washington Physicians Service					Yes	16,382	
30	Surgical Care Milwaukee			Yes				
31	Wisconsin Physician Service	Yes	22,891	Yes	333	Yes	16,344	
32	Aetna, Alaska					Yes	4,985	3
33	Aetna, Arizona					Yes	8,621	3
34	Aetna, Hawaii					Yes	1,741	3
35	Aetna, Nevada					Yes	4,466	3
36	Aetna, Oklahoma					Yes	16,435	3
37	Aetna, Oregon					Yes	8,958	3
38	Connecticut General							7
39	Continental Casualty, Illinois							30
40								
41	Equitable, Idaho							5
42	Equitable, New Mexico							5
43	Equitable, Tennessee							5
44	Equitable, Wyoming							5
45	General American Life, Missouri							5
46	Group Health Insurance							
47	Metropolitan Life, Kentucky					Yes	19,830	
48	Metropolitan Life, New York							4

Table 6-19 (continued)

MERGEABLE DATA SOURCES

Code	Carrier Name	CHAMPUS[1] Carrier	Non-hospital[2] Claims Paid	Medicaid[3] Fiscal Agent	No. of[4] Medicaid Recipients (000)	FEHBP Business Claimants Coverage	No. of[5] FEHBP Enrollees	Rank by Volume[6] of Private Health Insurance
49	Mutual of Omaha	Yes[d]	332,847					6
50	Nationwide, Ohio							>30
51	Nationwide, West Virginia							>30
52								
53	Pan American Life, Louisiana			Yes	290			>30
54	Prudential, Georgia							1
55	Prudential, New Jersey			Yes	572			1
56	Prudential, North Carolina							1
57	Travelers, Minnesota							2
58	Travelers, Mississippi							2
59	Travelers, Virginia							2
60	Union Mutual, Maine							30

1/ As of April 11, 1977, Reference 8a
2/ October 1, 1975 - September 30, 1976, Reference 8b
3/ As of July 5, 1977
4/ FY 1974
5/ June 30, 1976
6/ 1974 health insurance business, Reference 5

a. Arizona and New Mexico too
b. Maine, Vermont, New Hampshire, and Connecticut
c. Commercial companies
d. Colorado, Illinois, Ohio, Rhode Island and Texas

Manual, carriers are expected to consider non-Medicare physician fees when setting reasonable charges. Paragraph 5002 setting forth criteria for determining reasonable charge states:

5002. CRITERIA FOR DETERMINING A REASONABLE CHARGE

The two criteria set out in the Medicare law which must be considered in determining the reasonable charge for a service are: (a) the customary charges for similar services generally made by the physician or other person furnishing such services; and (b) the prevailing charges in the locality for similar services.

Therefore, the reasonable charge for a specific service, in the absence of usual medical complications or circumstances may not exceed the lowest of: (a) the physician's or other person's customary charge for that service: (b) the prevailing charge made for similar services in the locality (see 5020.3); or (c) the actual charge of the physician or other person rendering the service.

The law also provides that the reasonable charge for a service may not exceed the charge applicable for a comparable service and under comparable circumstances to the policyholders or subscribers of the carrier.

Paragraph 5010 reads:

5010. THE CUSTOMARY CHARGE

The customary charge is the amount which best represents the actual charges made for a given medical service by a physician to his patients in general, or by other persons who supply other medical and health services to the general public. The carrier should therefore obtain information on the customary charges of physicians and other persons not only from the Medicare program but from other available sources, e.g., from its own programs, from other insurance programs, from the Federal Employee Health Benefit Program, from CHAMPUS, from any studies conducted by State or local medical societies, and from public agencies. It also may ask physicians or other persons for their charges for services rendered to the public in general where the carrier decides that circumstances will permit this.

In instances where physicians or other persons may feel that the carrier does not have sufficient current information about their charges, they may volunteer this information to the carrier. Further, carriers should make known to the medical community their willingness to receive currently valid information regarding customary charges. However, any information on charges obtained from other sources should be validated, to the extent possible, against the carrier's claims experience under Medicare and its own programs.

(Quotation from January 15, 1977 Progress Report)

The diagram on the following page shows a number of contingencies that affect ultimate fees (and patient expense) under Blue Shield, depending on payment methods. Under the Blue Shield Federal employees high-option plan, 6 areas are demarcated, using boxes as follows:

Area I:	1,2
II:	6,7,9
III:	6,7,10
IV:	6,8,12
V:	1,3,5
VI:	6,8,11

The geographical distribution of these areas is as follows:

I. (BS participating physicians who accept schedule fee as payment in full for all patients). All areas not mentioned in II-VI.

II. (No BS participating physicians; UCR payment assured; review of UCR charges) Alabama, Alaska, Arizona, Georgia (counties served by the Atlanta plan), Indiana, Mississippi, Oklahoma, Tennessee, Virginia (Scott and part of Lee counties), West Virginia (5 counties), Wisconsin

III. (No BS participating physicians; UCR payment assured; no review) Illinois, Louisiana, North Carolina, Texas, parts of Ohio and Washington

IV. (No BS participating physicians, indemnity payment; no supplemental benefits up to physicians' charge) Connecticut

V. (BS participating physicians who accept schedule fees as payment in full for patients below income ceiling) Rochester, N.Y. (6 counties)

VI. (No BS participating physicians; indemnity payment; supplemental benefits up to physician's charge) Puerto Rico.[a]

a Sloan and Steinwald include percent of persons in a "Blue" area covered by UCR as an insurance-related variable affecting fees through its effect on coinsurance in their model, and also participating in Blue Shield as a possible response to fees. (Inquiry, December 1975) As indicated in the explanatory note on p. 9, actual coinsurance rate or extra charge involves several other contingencies.

REFERENCES

1. Civil Service Commission
   a. Total Estimated Number of Enrollees as of June 30, 1976
   b. Quarterly Summary of Enrollment in FEHBP by Plan & Option
   c. Annual Report of Financial and Statistical Data for Fiscal Year Ended June 30, 1976

2. 96th Cong. 1st Sess. US House of Representatives, Comm. on Interstate & Foreign Commerce, Subcomm. on Health & the Environment, Data on the Medicaid Program: Eligibility, Services, Expenditures Fiscal Years 1966-77, March, 1977

3. DHEW, HCFA, Action Transmittal HCFA - AT-77-74 (MMB) July 5, 1977

4. DHEW Pub. No. (SRS) 76-03153, Medicaid Recipient Characteristics and Units of Selected Medical Services Fiscal Year 1973, May 1976

5. Argus Chart of Insurance

6. NCHS, Series 10 No. 110, Use of Selected Medical Procedures Associated With Preventive Care, United States - 1973, DHEW Pub. No. (HRA) 77-1538, March 1977

7. Daniel N. Price, "Private Industry Health Insurance Plans: Type of Administration and Insurer in 1974", Social Security Bulletin, March 1977

8. CHAMPUS
   a. Where to send a claim for charges of a doctor or other individual provider (noninstitutional claim) - list received April 11, 1977
   b. Claims paid and claim rate tables October 1975 - 30 September 1976

9. Area Resource File

10. DHEW Pub. No. (HCFA) 77-03150 Medicaid Report B-1 (3/77) Medicaid Data March 1977

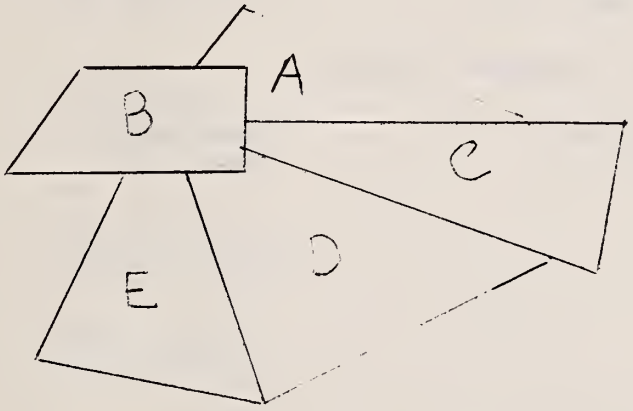
    M.S. Mueller and P.A. Piro, "Private Health Insurance in 1974: A Review of Coverage, Enrollment, and Financial Experience," Social Security Bulletin, March 1976.

11. U.S. Civil Service Commission Contractor Brochures, January 1978
    a) Governmentwide Service Benefit Plan (BRI 41-25)
    b) Governmentwide Indemnity Benefit Plan (BRI 41-24)
    c) GHI New York-New Jersey Health Plan (BRI 41-40)
    d) Washington Physicians' Service (BRI 41-36)
    e) Hawaii HMSA Plan (BRI 41-44)

APPENDIX 6-C

HYPOTHETICAL ILLUSTRATION OF FEE RESULTS OF ALTERNATIVE LOCALITY BOUNDARIES

The following hypothetical example illustrates how different prevailing fees for a procedure could result from combining counties in a carrier territory in different ways to form a locality. The diagram below represents the counties in a carrier area.



If it is assumed that in each county there were two physicians each of whom performed a given service the same number of times, and that their customary fee profiles were listed in Table 6-20 below, differences in prevailings would result from grouping the counties in different ways. The example is presented simply to highlight the importance of locality determination for Medicare fees. Different assumptions as to locality boundaries, fee variation, and volume of service would result in prevailings that differ from those shown. In the illustration, carrier localities were assumed to include only contiguous counties. Prevailings were determined on the assumption that all five counties comprised one area and also for various combinations of counties into two carrier localities. Areawide cost of Medicare services was computed assuming that the prevailing charge will equal the allowed charge and that only one service has been performed by each physician for the period of interest.

TABLE 6-20

Hypothetical Customary Charges

County	Physician ID	Customary Fee
A	1	$ 9
	2	10
B	3	11
	4	12
C	5	14
	6	15
D	7	8
	8	9
E	9	10
	10	12

TABLE 6-21

Prevailing Charges and Possible Cost

Carrier Localities	Customaries $	Prevailing $	Areawide Cost of Medicare Service* $
ABCDE	8,9,9,10,10,11,12,12,14,15	$12	$120
AC	9,10,14,15	14	56
BDE	8,9,10,11,12,12	12	72
			128
AB	9,10,11,12	11	44
CDE	8,9,10,12,14,15	14	84
			128
CD	8,9,14,15	14	56
ABE	9,10,10,11,12,12	12	72
			128
BE	10,11,12,12	12	48
ACD	8,9,9,10,14,15	14	84
			132
DE	8,9,10,12	10	40
ABC	9,10,11,12,14,15	14	84
			124
A	9,10	10	20
BCDE	8,9,10,11,12,12,14,15	12	96
			116
B	11,12	12	24
ACDE	8,9,9,10,10,12,14,15	12	96
			120
C	14,15	15	30
ABDE	8,9,9,10,10,11,12,12	11	88
			118
D	8,9	8	16
ABCE	9,10,10,11,12,12,14,15	12	96
			112
E	10,12	12	24
ABCD	8,9,9,10,11,12,14,15	12	96
			120

* Upper bound - if charges were equal to prevailing, cost to Medicare (80%) + cost to patient (20%), assumes each doctor performed one service.

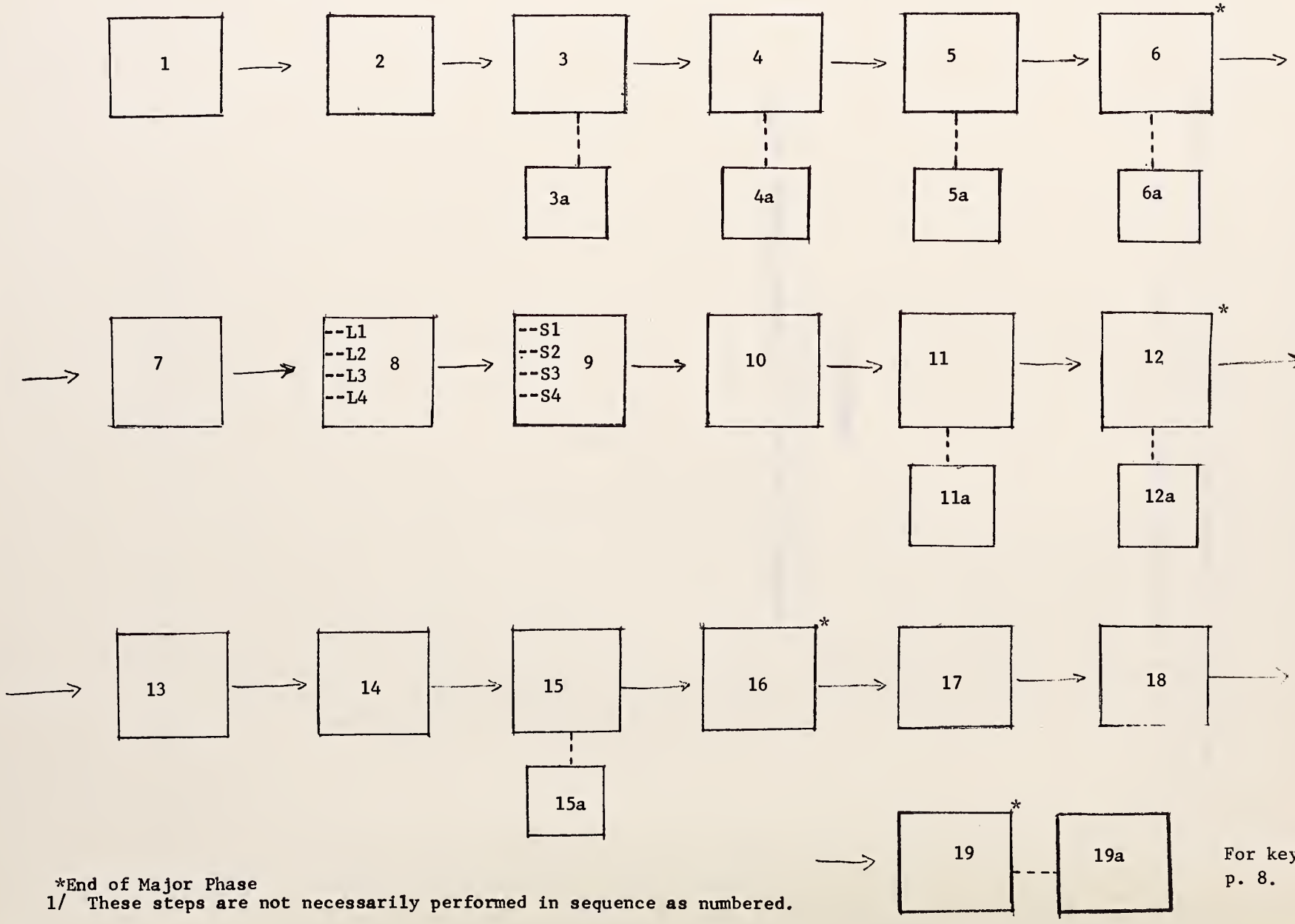
In the example shown, the lowest prevailing was $8, the highest was $15, almost double. Total Medicare outlay varied from $112 to $132.

APPENDIX 6-D

OUTLINE OF STEPS IN REASONABLE CHARGE PROCESS

Figure 6-2

PATH OUTLINE FOR DETERMINATION OF THE FEE
FOR A PHYSICIAN'S SERVICE ALLOWED UNDER SMI 1/



*End of Major Phase

1/ These steps are not necessarily performed in sequence as numbered.

For key, see p. 8.

Determination Of The Fee For A Physician's Service Allowed Under SMI [1]

1) Claims for payment for service to Medicare patients submitted to carriers acting as intermediaries for SSA in Calendar Year (t) (Unassigned claims are submitted by the beneficary, assigned claims, by the doctor.)

2) Sorted by procedure (Pr)

3) Arrayed for procedure, by size of charge
   3a) Non-Medicare data considered

4) Extremes eliminated
   4a) Extremes reexamined

5) Number of bills and time period covered $\geq$ minimum required for determining a customary charge
   If yes, proceed to 6)
   If no, apply 5a and 6a)
   5a) Alternative methodsof charge determination
      1) Use of previous prevailing
      2) 50th percentile prevailing
      3) Use of previous customary
      4) Relative value units and conversion factors
      5) Consultant advice
      6) Exception allowed for unusual circumstance

6) Customary charge (C) for Pr for MD for Fiscal Year t + 1.5 ($FY_{t + 1.5}$) [2]
   6a) "Surrogate" customary for Pr for MD for $FY_{t + 1.5}$

7) All customary charges for $FY_{t + 1.5}$ for procedure (Pr) by physicians in carrier jurisdiction assembled.

8) Sorted by locality (L)

9) Sorted by physician specialty (S)

10) Customary charges for procedure (Pr), locality (L) and physician specialty (S) arrayed by size of charge

1] The various components of the process of setting Medicare fees are indicated, but appearance of a time sequence may be misleading as several of the necessary choices prior to payment of a bill can be taken in more than one order. (See especially steps 8 and 9 in relation to steps 3 and 4.) The above Path Outline does not cover printouts of charge information, appeals procedures or, except as indicated in 15a), rules governing the retention of claims data for future use in reasonable charge determination. Also, special instructions concerning physician visits to patients in nursing homes and hospitals and regarding anesthesiologist fees are not indicated.

2] By regulation, the median of the arrayed actual charges is the customary.

11) Number of customaries $\geq$ minimum required for determining prevailing charge (Pv)
If yes, proceed to 12)
If no, apply 11a) and 12a)
11a) Alternative methods of determining prevailing charge (Pv)
1) Combine localities by specialty or groups of specialties
2) Combine specialties by locality
3) Use prevailing by carrier service area
4) Use conversion factors
5) Ask medical consultants

12) 75th percentile is actual Pv for $FY_{t + 1.5}$

12a) "Surrogate" actual Pv for $FY_{t + 1.5}$

13) Maximum allowable $Pv_{t + 1.5}$ = maximum [Pv_{73} [1] x (economic index), Pv_{75}]
(This is the "no rollback" provision.)

14) "Accepted" $Pv_{t + 1.5}$ = minimum [actual $Pv_{t + 1.5}$, maximum allowable $Pv_{t + 1.5}$]

Optional: Carrier compares screen with private business Medicare Pv $\leq$ private business prevailing

15) $Bill_b$ filed by MD for service during $FY_{t + 1.5}$

15a) Added to charges used in calculating customary in $FY_{t + 2.5 \text{ or } 3.5}$ [2]

16) Allowed (reasonable) MD charge = miminum (bill, customary, "accepted" $Pv_{t + 1.5}$) [3]

17) Medicare covers 80% of allowed charge

18) MD accepts assignment?
If yes, proceed to 19)
If no, proceed to 19a)

19) Patient is responsible for 20% of allowed charge
19a) Patient is responsible for 20% of allowed charge plus bill minus allowed charge

1] In case no prevailing price for a procedure comparable to $FY_{t + 1.5}$ existed in FY 1973, a 1973 prevailing must be constructed by one of several methods outlined by HEW.

2] A claim for payment for a physician service during $FY_{t + 1.5}$ can be translated into a claim during $CY_{t + 1}$ or $CY_{t + 2}$ according to its occurrence during the first or second half of the fiscal year. Thus, it becomes part of the array of actual charges used in determining the customary charge in either $FY_{t + 2.5}$ or $FY_{t + 3.5}$.

3] Medicare reasonable charges may not exceed charges for a comparable service to non-Medicare patients covered by a carrier.

In the following list, steps in the Path Outline of Medicare fee determination are related to individual items in IM 75-53, a two-part memorandum from the Bureau of Health Insurance to its regional representatives outlining "a national uniform approach to evaluating carrier reasonable charge compliance." Part I is a national reasonable charge profile development guide which requests descriptive answers to specific questions concerning carrier performance. Part II is an evaluation questionnaire with point scoring.

Box in Path Outline	Items in Part I in IM 75-53
1	A
2	
3	
3a	A, D
4	A
4a	A
5	B
5a	B, D
6	B
6a	B, D
7	C
8	C
9	A, C
10	C
11	C
11a	D
12	C
13	
14	
15	
15a	A, E
16	
17	
18	
19	
19a	

Laws and administrative regulations and guidelines on Medicare reasonable charge determination keyed to the Path Outline are shown below. Administrative regulations or guidelines issued to carriers and regions are indicated by IL or COL before a number, and those to regions, by IM. Not every instruction regarding the steps in charge determination is indicated. Currently applicable references sufficient to delineate the process are furnished.

Box in Path Outline	Public Laws	Carrier Manual Sections	Special Instructions or Guideline
1		3002	
2			
3			IL 71-7
3a		5010, 5026	IL 71-7
4			
4a			
5			
5a		5010.2-.4, 5022 5024, 5200	COL 75-20
6	92-603 Sec 224	5010.1	IL 71-17
6a			IL 70-10
7			IL 71-7
8		5020.1	
9		5020.2	
10			IL 71-7
11		5020	IL 71-7
11a		5022, 5205	
12	92-603 sec 224	5020	IL 71-7
13	92-603 sec 224 94-182 sec 101	5020.3	IL 75-17, IL 76-4
14	94-368		IL 75-17, IL 76-4
15		3002	
15a			IL 71-7
16	92-603 sec 224	5026	
17			
18	89-97 Title XVIII		
19			
19a			

CHAPTER 7

CARRIER PERFORMANCE MEASURES AND ASSIGNMENT RATES

Chapter 6 was concerned with the variety of carrier choices in the process of determining reasonable charges. Carrier performance under Medicare Part B also involves processing speed and claims control through investigation, reduction and denial of claims. These aspects of carrier performance, which may indirectly influence physician fees, are examined in Chapter 7.

Introduction

Carrier efficiency is of direct concern to HCFA in determining Medicare administrative costs, and therefore inter-carrier comparisons provide information that is useful in developing contract standards, in carrier selection, and in monitoring of contracts. This aspect of efficiency is represented by processing speed and turnover of claims. Administrative cost per claim as a basic measure of efficiency is discussed in Chapter 4.

Another aspect of carrier performance is ability to keep claims costs down, given the local market forces with which the carrier is confronted when serving as agent for Medicare. This type of efficiency is represented by the level of claims costs after reduction, showing the effect not only of reasonable charge determination but also of application of various carrier controls and rules governing exceptions to individual claims. The level of post-reduction claims costs is an outcome measure; the process measures relevant to it are rate of claims investigation and rate of claims denial.

Evaluation of the effectiveness of Medicare administration includes not only ability to keep governmental costs for needed services in check but also control of residual costs paid by claimants. Assignment of claims is considered a desirable practice because it reduces beneficiary burden. While there are limitations to this reasoning in that certain physicians are able to derive high revenues from their typical procedures while accepting assignment,[1/] in general assignment does represent willingness to abide by a type of price control.

Assignment rates express an interaction of carrier, provider, and beneficiary behavior. The provider interested in revenue maximization perceives carrier behavior with regard to claims investigation, reduction, and denial and can evaluate revenue effects of moving toward or away from assignment under a given set of carrier practices. The beneficiary participates in ultimate assignment rate determi-

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1/ As shown in our micro study, Chapter 12.

nation by selecting doctors who will accept assignment, beneficiary motivation being assumed to be connected with ability to pay, self-evaluation of severity of illness, and other factors. Market influences such as these are considered in the analysis of assignment rate determination by regression methods,as described in Chapter 9, in which carrier, provider, and beneficiary factors serve as variables. In the present chapter, inter-carrier variation in assignment rate and measures of performance is presented and differences by region, within and between carrier types, and for assigned and unassigned claims are noted.

The data source for analysis of carrier performance is a BHI tape that contains information gathered from carriers on form SSA 1565, which are received monthly. The analysis concentrated on the 12 months total representing Fee Year 1976. Forms 1554 and 1556 were excluded from the study.[1/] In addition, for assignment rates Physician Assignment Tabulation ASGN-5 for 1971 was used.

Denial and investigation rates together with speed of processing are believed to affect providers' willingness to accept assignment. High denial and investigation rates and slow processing of claims would tend to reduce assignment rates, since by accepting assignment, physicians may risk non-payment, and at best, may expect to have to wait for payment. (These effects are tested in the analysis reported in Chapter 8.)

Measures of carrier efficiency were provided by mean processing time and the ratio of claims pending to claims processed. Low mean processing time and low backlog of unprocessed claims were interpreted as signifying efficient performance. The comparison of submitted and reduced charges expresses the effect of the reasonable charge process per se. Since only aggregate carrier

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1/ Submitted by hospital, skilled nursing facility, or home health agency, or by a group practice prepayment plan.

data were available, no distinction by procedure or specialty could be made. Tables 7-9, 10 and 11 show carrier data on all performance measures.[1/] All the measures of interest show differences between assigned and unassigned claims.

Many of the statistical measures are heavily affected by the frequency of small claims. It is important not to infer differences in program outlays, physician revenues, or other dollar values from differences in percent of claims assigned, denied, etc.

Physician Assignment Tabulation ASGN-5 for 1971 payment records, supplied to CUNY by HCFA, was reviewed in order to ascertain whether assignment rates varied by specialties and by size of reasonable charge. Table 7-1 shows ranked assignment rates by specialty. Assignment rates range from 34.8% of payment records for otology, laryngology and rhinology to 89.3% for radiotherapy provided by osteopaths, the average for all specialties being 57% of payment records. Specialties with above-average assignment rates accounted for 55.1% of payment records. Four specialties in this group, general practice, general surgery, radiology and "clinic or other group practice" accounted for 48.9% of payment records. Specialties with below-average assignment rates included internal medicine, ophthalmology, urology, orthopedics and anesthesiology, which account for 34.3% of all payment records.

Table 7-2 shows the number of specialties within assignment rate group intervals. Of the 38 specialties included in the analysis, 29, accounting for 90.5% of payment records, had assignment rates between 46.7% and 66.2%. The data show that assignment rates vary by specialty.

1/ This analysis is based on FY 1976 data and does not reflect the change of carriers for Maine, i.e., replacement of Union Mutual Insurance-Maine by Blue Shield-Maine as of December 1, 1977.

However, there is no variation by size of reasonable charge.[1/]

The rest of this chapter is based on carrier performance data for 1976 contained in the monthly workload reports submitted to HCFA.

Carrier Workload Data for 1976

The aggregate volume of Medicare claims processed in 1976 was 55,000,000 for the Blue plans, 8,400,000 for the commercial carriers for single areas, 19,000,000 for the six multistate commercials, and 2,500,000 for GHI organization - a national total of over 85 million claims. In percentage shares, the Blues take care of 65%, the single-state commercials 10%, the larger commercials 22% and GHI 3%.

Assignment Rate

Assignment rate, defined as percent of assigned 1490s[2/] to all 1490s received or processed, reflects not only carrier performance but also the effect of the Medicare program on beneficiary and provider behavior. Both claims received and claims processed were available for study but as early results showed that the two data bases yielded similar findings, further analysis was performed only on assignment rate defined in terms of 1490 claims processed. The national average is 51.1%, but the rate varies substantially among carriers. When assignment rate is viewed by Medicare region (Table 7-4), the rate ranges from 34.1% for Seattle to 67.2% for Boston. Philadelphia, Dallas and San Francisco all have rates above the national average, but the remaining regions fall below it. The Blue rate (Table 7-6) was above the national rate but all other

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1/ Table 7-3 shows the lack of variation by size of charge for all specialties. When assignment rate is analyzed by size of charge within specialty, the lack of variation is confirmed.

2/ Submitted for physician, supplier, or ambulance service.

carrier types were below the national rate. The range within the Blue plans was from 22.8% (Montana) to 77.2% (Rhode Island). In the commercial single-area carrier group the rate ranged from 22.3% in Occidental Life, California to 72.0% in Union Mutual of Maine. (Table 7-9). For the multi-area commercial carriers with an overall average of 45.3%, assignment rates in individual territories varied over an equally large range, but for the organizations considered as multistate entities, the range was from 36.5% for Nationwide to 57.5% for Metropolitan. (Table 7-7). Success in attaining high assignment rates was therefore not a stable characteristic of any type of carrier organization.

Investigation Rate [1/]

Nationwide, 11.0% of all claims processed were investigated. The regional variation was from a low of 8.9% in the San Francisco region to 13.9% in the Atlanta region. The regional ranks for assigned claims investigation rates are quite different from those for unassigned: Denver is highest for the former and seventh for the latter.

All carrier types had rates of about 11% except for GHI, whose average of 7.8% was undoubtedly depressed by the strike in its New York office. Within the Blue group, the investigation rate ranged from 3.1% in Rhode Island to 14.4% in Indiana. Within one-state commercial organizations, the low was 6.4% (Pan American Life Insurance, Louisiana) and the high 17.8% (General American Life, Missouri). For the multistate commercials, Prudential and Metropolitan were lowest with under 9% and Nationwide was the most active with 16.3%.

However, Travelers had the highest investigation rate for unassigned

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1/ Tables 7-4, 6, 7, and 9 are the sources for these findings.

claims, about 20%. The U.S.-wide investigation rate of unassigned claims is more than double that of assigned claims, 15.1% vs. 7.1%.

Denial Rate 1/

The overall denial rate for all claims submitted on form 1490 was 6.1% in FY 1976; for assigned claims it was 5.3% and for unassigned claims 7.0%. The range of carrier variation in the overall rate is from a low of 3.2% for GHI, New York, and Union Mutual Life, Maine to a high of 13% for Illinois Medical Service. The variation in assigned claims and unassigned claims more or less resembles that for all claims.

The regions with the highest denial rates were Chicago and Seattle. Low rates (under 5.5%) were found in 5 regions. San Francisco had the highest denial rate for unassigned claims (8.6%) and Chicago for assigned (7.7%). Denial rates varied both among and within types of carrier organization.

The average denial rate for Blue plans was 5.9% for all claims (5.2% for assigned and 6.8% for unassigned). Within the Blue carriers, Rhode Island had the lowest denial rate for all claims, Delaware for assigned, and North Dakota for unassigned; Illinois had the highest denial rate for total and unassigned claims and Western New York for unassigned.

Commercial carriers had higher denial rates than Blue carriers, and this difference was most marked for the single-state group, which had a 7.7% rate. In this group, Union Mutual, as mentioned earlier, was the lowest and Pan American Life the highest. The multistate for-profit organizations had an average denial rate of 6.3%; Nationwide was at the top of the range and Prudential at the bottom. Nationwide had the highest rate too for assigned-claims denial and Metropolitan held this position for unassigned claims.

1/ Tables 7-4, 6, 7, and 9 are the sources for these findings.

Billed Charges and Charge Reduction [1/]

In about 3/4 of all Medicare claims, the submitted charges for covered services were reduced by the carrier. This occurred somewhat more often in unassigned claims. The average percent by which the charge was reduced was 18.8%. The amount of the reduction averaged $14.70, and the figure was larger for unassigned claims. As would be expected, however, before reduction unassigned submitted charges averaged $11.90 higher than assigned, so that even after the larger reduction, unassigned charges were substantially higher than assigned ($68.35 compared to $58.58.) Since these figures are based on payment records in which both type and number of services can vary, the differences should not be interpreted as signifying simple differences in price for Medicare services.

Claims reduction was most common in the San Francisco region and least so in Philadelphia. Regions varied as to the extent of difference in frequency of reduction between unassigned and assigned claims.

Post-reduction charges for all claims were lowest, on the average, for the Blues. For assigned claims, they had $56.54 average, and for unassigned $62.95.

New York, Chicago, and San Francisco had the highest overall charges before reduction, San Francisco unassigned claims at $96.00 being $11.86 above the national average, and New York attaining for assigned claims the figure of $95.21 compared with $72.36 for the U.S. After reduction, New York and San Francisco were less than $2.00 above the national average, and Chicago, $4.00, but all three remained at the top as to size of charge. In contrast, the Boston region had a markedly lower level of charges before reduction and

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1/ Tables 7-5, 6, 8, and 10 are the sources for these findings.

then, after reducing bills by an average of 18.9% of the charges, emerged with $48.88 post-reduction charges, the lowest figure of all U.S. regions. There was little variation among carrier type in frequency of bill reduction when assigned and unassigned claims are considered together. However, for unassigned claims the commercial single-area group has a rate of 82.0% compared to 78.5% for all carrier types. Within the Blues, the low was 65.7% (Indiana) and the high 85.4% (South Dakota). The spread is similar for the single-area group: if all claims are lumped, the range is from 66% for Union Mutual of Maine to 84% for Occidental in California. Among the multistate carriers, Nationwide was at the top with 84% but Aetna was very low with 56%.

Commercial single-area carriers had the highest post-reduction charges, averaging $77.62. Within this group Occidental was highest with $85.40 and Union Mutual lowest with $50.70. The multistate for-profit group had an average of $68.21, Aetna being highest and Equitable lowest.

In the Aetna territories, submitted charges for assigned claims were highest among the multistate carriers and for total claims Aetna shared the top position for submitted charges before reduction with Nationwide.

Having least frequent reduction, Aetna emerged with the highest average charges after reduction. The proportion by which claims were reduced was 16.7% for the multistate organizations, Aetna being lowest and Equitable highest.

Among all individual carrier territories, Travelers-Minnesota has a national high for post-reduction charges - $105.70, but Aetna-Alaska exceeds this for assigned claims with $117.50.

The high for unassigned claims is also held by Travelers-Minnesota and the low of $22.80 is found for Rhode Island Physicians Service. Attention is called again to the possible influence of mix and number of services on these apparent contrasts in dollar values. However, frequency of reduction and percent by which claims are reduced are more independent of the service content of the submitted claim.

Mean Processing Time [1/]

The mean processing time for all carriers (Table 7-11) is 15.1 days for all claims, 13.6 days for assigned claims, and 16.6 days for unassigned claims. For Blue plans, the averages were slightly below the all-carrier figures. Rhode Island did speediest processing of assigned, unassigned, and total claims; Delaware was slowest among the Blues for assigned and total claims (25.7 and 27.0 days) and Genesee Valley, New York was slowest for unassigned claims with 33.3 days. Commercial carriers - one area - were slower than the Blues on the average but their slowest members were much faster than the slowest Blues. Among the multistate commercial carriers, Travelers and Nationwide were fastest and Metropolitan and Prudential slowest, taking 5 days more than the average for this carrier type. It should be noted that Metropolitan's slow processing cannot be ascribed to a heavy investigation rate since it was almost the lowest of the multistate carriers whereas Nationwide had a high investigation rate and fast processing.

Among regions, Seattle was the fastest (10.6 days) and New York the slowest (20.6 days). Boston and Seattle were the fastest for assigned claims. Atlanta was second slowest for all claims and for unassigned claims. These patterns were reflected in figures for stock of pending claims as a percent

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1/ Tables 7-4, 6, 7, and 11 are the sources for these findings.

of claims received: the stock figures were higher for carriers with slower processing of claims.

Summary

To sum up, carrier performance has a number of dimensions. Some of them, like processing speed, appear to be primarily of concern for administrative cost but others affect the volume of charges for which the Medicare program assumes payment responsibility. The possibility that physician fee-setting and assignment behavior in different parts of the country is influenced by rapidity of payment after a claim is submitted, likelihood of being investigated, and risk of denial or reduction makes these aspects of carrier performance take on extra importance. The statistical distributions show variation by Medicare region, carrier type, and individual carrier territory, but the variations are by no means identical for the different measures. For example, investigation rate is not markedly different for the carrier types (except for GHI, which had special problems), but bill size after reduction does show substantial differences. Some differences are traceable to obvious features of the local health economy (such as high prices in Alaska) but others are not. No one type of carrier organization shows uniform and clear superiority, from the regulatory point of view, in all dimensions. Contracting for service in administering Medicare payments therefore involves trade-off among desired objectives - does HCFA place speed above investigation rate, for example?

To make such decisions, it is also important to consider the possible effects that all these aspects of performance have on the Medicare market. That is, aside from their interest in providing a view of the carrier differences in performance, the statistics presented in Chapter 7 provided CUNY with a set of carrier descriptor variables to be considered as a possible major

influence on fees and assignment behavior. The analysis in which this information was used is presented in chapters 8 and 9.

TABLE 7-1

RANKED SPECIALTY [a] ASSIGNMENT RATES, 1971

US Total

Rank	Specialty	Assignment Rate %	Percent of Total Payment Records Specialty	Payment Records Cumulative
Total	All	57.0	100.0	100.0
1	Radiation Therapy (Osteopaths only)	89.3	*	*
2	Roentgenology, Radiology (Osteopaths only)	84.2	.1	.1
3	Family Practice	73.5	.9	1.0
4	Physical Medicine and Rehabilitation	66.2	.3	1.3
5	Clinic or Other Group Practice, Except GPPP	66.0	5.2	6.5
6	Podiatry - Surgical Chiropody	65.6	1.8	8.3
7	Radiology	65.3	7.9	16.2
8	Obstetrics (Osteopaths only)	64.3	*	16.2
9	General Surgery	64.0	8.3	24.5
10	Peripheral Vascular Diseases or Surgery (Osteopaths only)	63.9	*	24.5
11	General Practice	63.6	27.5	52.0
12	Unknown	62.3	1.0	53.0
13.5	Pathology	61.7	1.5	54.5
13.5	Thoracic Surgery	61.7	.6	55.1
15	Gynecology (Osteopaths only)	60.8	*	55.1
16	Miscellaneous	56.2	1.9	57.0
17	Pathologic Anatomy; Clinical Pathology (Osteopaths only)	55.4	*	57.0
18.5	Plastic Surgery	55.1	.2	57.2

TABLE 7-1 (Continued)

RANKED SPECIALTY [a] ASSIGNMENT RATES, 1971

US Total

Rank	Specialty	Assignment Rate %	Percent of Total Payment Records Specialty	Cumulative
18.5	Pulmonary Diseases	55.1	.2	57.4
20	Neurological Surgery	54.6	.4	57.8
21	Psychiatry	52.3	.5	58.3
22	Orthopedic Surgery	51.9	2.8	61.1
23	Manipulative Therapy (Osteopaths only)	51.5	.2	61.3
24	Anesthesiology	51.4	3.1	64.4
25	Urology	51.1	3.6	68.0
26	OB Gynecology	49.6	1.1	69.1
27	Gastroenterology	49.4	.4	69.5
28	Neurology	49.2	.5	70.0
29	Cardiovascular Disease	49.1	1.3	71.3
30	Internal Medicine	48.6	19.9	91.2
31	Ophthalmology, Otology, Laryngology, Rhinology (Osteopaths only)	47.2	.2	91.4
32	Psychiatry, Neurology (Osteopaths only)	46.7	.1	91.5
33.5	Proctology	42.0	.3	91.8
33.5	Oral Surgery (Dentists only)	42.0	*	91.8
35	Dermatology	41.3	1.6	93.4

TABLE 7-2

NUMBER OF SPECIALTIES AND PERCENTAGE OF PAYMENT RECORDS WITHIN ASSIGNMENT RATE GROUPS, 1971

US Total

Assignment Rate Groups (Percent)	Number of Specialties in Group	Percent of Total Payment Records
Total	38	100.0 %
80.0 or more	2	.1
75.0 - 79.9	-	-
70.0 - 74.9	1	.9
65.0 - 69.9	4	15.2
60.0 - 64.9	8	38.9
55.0 - 59.9	5	2.3
50.0 - 54.9	5	10.6
45.0 - 49.9	7	23.5
40.0 - 45.9	3	1.9
Less than 40.0	3	6.6

Source: Table 7.1 "1971, Ranked Specialty Assignment Rates Total U.S.A."

TABLE 7-3

ASSIGNMENT RATE RANKS BY REASONABLE CHARGE GROUPS, 1971

US Total

Size of Reasonable Charge ($)	Rank	Assignment Rate %	Percent of Total Payment Records Group	Cumulative
Total		57.0	100.0	100.0
$ 1-9	1	71.2	*	*
10-19	2	66.9	15.6	15.6
20-29	15	57.8	21.3	36.9
30-39	17	53.8	11.5	48.4
40-49	18	53.6	8.1	56.5
50-74	20	51.4	17.9	74.4
75-99	19	52.3	7.3	81.7
100-149	16	55.3	7.3	89.0
150-199	11	59.1	3.3	92.3
200-249	8	60.7	1.9	94.2
250-299	4	61.6	1.2	95.2
300-349	3	62.4	.9	96.3
350-399	6.5	60.8	.8	97.1
400-449	6.5	60.8	.8	97.9
450-499	5	61.2	.5	98.4
500-599	13	58.9	.8	99.2
600-699	10	59.6	.3	99.5
700-799	14	58.5	.2	99.7
800-899	12	59.0	.1	99.8
900 & over	9	60.4	.2	100.0

* Less than 0.1

Source: Job 5261 Part V
"Physician Assignment - Tabulation Assn. - 5
Payments Made in 1971 Based on Records Processed from 01/01/71 to 03/01/72
Last Year of Service - 1971 - All States -"

TABLE 7-4

Carrier Performance Rates, by Medicare Region, FY 1976

Medicare Region		Assignment Rate	Investigation Rate			Denial Rate			Mean Processing Time		
			Total	Assigned	Unassigned	Total	Assigned	Unassigned	Total	Assigned	Unassigned
Total U.S.A.		51.1%	11.0%	7.1%	15.1%	6.1%	5.3%	7.0%	15.1%	13.6%	16.6%
I	Boston	67.2	7.9	4.0	15.9	5.3	4.4	7.2	11.0	9.9	13.3
II	New York	49.3	9.6	8.0	11.2	5.9	5.5	6.3	20.6	19.9	21.4
III	Philadelphia	55.8	11.5	6.8	17.4	5.4	4.4	6.6	11.5	10.1	13.1
IV	Atlanta	50.0	13.9	8.9	19.1	5.3	4.1	6.5	18.3	15.9	20.7
V	Chicago	46.7	11.9	7.6	15.6	7.5	7.7	7.3	13.0	11.8	14.1
VI	Dallas	55.0	11.4	8.2	15.4	6.1	5.4	7.0	14.6	13.4	16.0
VII	Kansas City	42.5	12.1	7.2	15.8	5.2	4.0	6.2	15.5	13.6	16.9
VIII	Denver	42.8	12.0	10.2	13.4	5.3	4.6	5.9	15.1	15.4	14.9
IX	San Francisco	52.8	8.9	5.0	13.3	6.8	5.2	8.6	14.4	12.7	16.3
X	Seattle	34.1	11.4	7.6	13.3	7.0	6.1	7.5	10.6	9.9	11.0

Source: Workload and Processing time file Printout DAGC064 11/30/78.

TABLE 7-5

Billed Charge Per Claim and Reduction of Billed Charges, by Medicare Region, FY 1976

Medicare Region	Percent of claims where billed charge was reduced			Average billed charge for total claims paid plus claims applied toward deductible								
				Before Reduction			After Reduction			Percent reduction in the average billed charge		
	Total	Assigned	Unassigned	Total	Assigned	Unassigned	Total	Assigned	Unassigned			
Total U.S.A.	75.8%	73.2%	78.5%	$78.01	$72.36	$84.14	$63.33	$58.58	$68.35	18.8%	19.0%	18.9%
Boston	73.0	71.6	76.0	60.30	58.16	64.81	48.88	47.03	52.79	18.9	19.1	18.5
New York	76.5	75.2	77.8	83.54	95.21	72.07	65.85	74.79	57.07	21.2	21.5	20.8
Philadelphia	71.2	68.0	75.5	78.65	80.26	76.57	64.38	65.46	63.00	18.1	18.4	17.7
Atlanta	73.8	70.9	76.9	78.45	66.46	90.76	63.77	54.71	73.07	18.7	17.7	19.5
Chicago	76.8	71.3	81.5	82.14	68.74	93.79	67.09	55.88	76.85	18.3	18.7	18.1
Dallas	75.6	74.2	77.4	75.60	65.39	88.35	62.70	54.33	73.14	17.1	16.9	17.2
Kansas City	74.0	69.4	77.5	74.88	64.63	82.63	63.01	54.61	69.37	15.9	15.5	16.0
Denver	79.1	75.5	81.8	67.37	60.72	72.43	56.20	51.27	59.95	16.6	15.6	17.2
San Francisco	80.8	80.3	81.4	82.00	69.85	96.00	65.11	55.41	76.35	20.6	20.7	20.5
Seattle	76.6	75.8	77.1	66.92	56.18	72.57	55.93	47.17	60.54	16.5	16.0	16.6

Source: Part B Workload File Printout DAMGC064 11/30/78.

TABLE 7-6

Selected Carrier Performance Measures by Type of Carrier Organization

	Total[1/] U.S.A.	Blue Cross Blue Shield	Commercial Multi Area	Commercial For One Area	GHI[2/]
Assignment rate	51.1%	55.5%	45.3%	35.0%	44.8%
Investigation rate					
Total	11.0	11.1	11.2	11.4	7.8
Assigned	7.1	7.2	7.3	5.7	7.3
Unassigned	15.1	15.9	14.5	14.5	8.2
Denial rate					
Total	6.1	5.9	6.3	7.7	4.8
Assigned	5.3	5.2	5.2	6.7	4.2
Unassigned	7.0	6.8	7.2	8.2	5.2
Claims processed as percent of claims received					
Total	98.6	98.7	98.5	99.8	92.9
Assigned	98.8	98.8	99.2	99.0	93.2
Unassigned	98.4	98.5	97.9	100.2	92.6
Claims paid as percent of claims processed					
Total	74.0	74.4	72.5	73.9	78.9
Assigned	75.5	76.5	72.6	71.6	82.8
Unassigned	72.5	71.7	72.5	75.1	75.8
Claims applied toward deductible as percent of claims processed					
Total	19.9%	19.7%	21.2%	18.4%	16.3%
Assigned	19.2	18.3	22.2	21.7	13.0
Unassigned	20.5	21.5	20.3	16.7	19.0
Percent of claims where billed charge was reduced					
Total	75.8	76.1	74.1	78.8	74.1
Assigned	73.2	73.8	71.9	72.9	71.1
Unassigned	78.5	79.0	75.9	82.0	76.6

TABLE 7-6 (continued)

Selected Carrier Performance Measures by Type of Carrier Organization

	Total 1/ U.S.A.	Blue Cross Blue Shield	Commercial Multi Area	Commercial For One Area	GHI 2/
Average billed charge for total claims paid plus applied toward deductible					
Before reduction					
Total	$78.01	$73.97	$81.95	$95.41	$82.90
Assigned	72.36	70.56	74.35	79.26	88.50
Unassigned	84.14	78.29	88.38	104.24	78.32
After reduction					
Total	$63.33	$59.37	$68.21	77.62	$66.92
Assigned	58.58	56.54	61.90	65.40	71.20
Unassigned	68.35	62.95	73.54	84.31	63.41
Mean processing time					
Total	15.1	14.6	13.8	17.8	25.3
Assigned	13.6	13.2	13.2	15.1	24.0
Unassigned	16.6	16.4	14.3	19.3	26.3
Claims processed within 15 days Percent of all claims processed					
Total	71.3%	73.2%	73.6%	62.9%	40.2%
Assigned	76.0	77.7	75.3	71.7	43.6
Unassigned	66.5	67.6	72.3	58.2	37.4
Claims processed in over 90 days as percent of all claims processed					
Total	0.9	0.9	0.9	1.2	1.1
Assigned	0.9	0.8	1.0	0.9	1.2
Unassigned	1.1	1.1	0.9	1.3	1.0
Percent reduction in the average billed charge					
Total	18.8%	19.7%	16.7%	18.7%	19.3%
Assigned	19.0	20.0	16.7	17.5	19.5
Unassigned	18.8	19.7	16.9	19.1	19.0

1/ Includes Department of Public Welfare Oklahoma

2/ GHI includes GHI-New York and GHI-Florida. GHI-New York performance was affected by the 1976 strike.

Sources: Part B Workload and Processing Time file Printout DAMGC 064 11/30/78.

TABLE 7-7

Performance Rates for Commercial Multi-area Carriers, FY 1976

	Assignment Rate	Investigation Rate			Denial Rate			Mean Processing Time		
		Total	Assigned	Unassigned	Total	Assigned	Unassigned	Total	Assigned	Unassigned
Total	45.3	11.2	7.3	14.5	6.3	5.2	7.2	13.8	13.2	14.3
Prudential	52.3	8.7	4.9	12.9	5.5	4.7	6.3	19.8	17.9	21.9
Metropolitan	57.5	8.8	7.0	11.2	6.5	4.4	9.4	21.0	19.4	23.2
Travelers	55.8	14.0	9.4	19.8	5.1	3.8	6.7	6.9	6.4	7.5
Nationwide	36.5	16.3	11.2	19.2	8.4	8.1	8.5	9.2	7.6	10.1
Equitable	46.0	9.3	6.3	11.7	5.7	4.7	6.6	13.3	12.9	13.6
Aetna	25.3	9.9	6.7	11.0	6.6	6.8	6.6	10.3	10.1	10.4

Source: Workload and Processing time files printout DAMGC 064 11/30/78.

TABLE 7-8

Billed Charge per Claim and Reduction of Billed Charges Commercial Multi-area Carriers, FY 1976

	Percent of claims where billed charge was reduced			Average billed charge for total claims paid plus claims applied toward deductible						Percent reduction in the average billed charge		
				Before reduction			After reduction					
	Total	Assigned	Unassigned	Total	Assigned	Unassigned	Total	Assigned	Unassigned	Total	Assigned	Unassigned
Total	74.1%	71.9%	75.9%	$81.95	$74.35	$88.38	$68.21	$61.90	$73.54	16.7%	16.7%	16.9%
Prudential	76.0	72.9	79.4	80.59	79.73	81.55	66.58	65.91	67.33	17.4	17.3	17.4
Metropolitan	79.9	76.3	84.9	76.54	64.25	94.05	61.73	52.00	75.66	19.3	19.1	19.6
Travelers	68.3	62.1	76.5	82.24	66.76	102.39	69.51	56.43	86.54	15.5	15.5	15.5
Nationwide	83.8	86.0	82.4	86.55	75.62	92.85	72.09	63.49	77.04	16.7	16.0	17.0
Equitable	80.2	76.4	83.5	75.33	67.74	81.94	60.46	55.00	65.24	19.7	18.8	20.4
Aetna	56.2	51.6	57.8	86.54	89.34	85.60	74.68	77.61	73.68	13.7	13.1	13.9

Sources: Workload and Processing Time Files Printout DAMGC 064 11/30/78.

TABLE 7-9

CLAIMS ASSIGNMENT, DENIAL AND INVESTIGATION RATES, BY CARRIER, FY 1976

Carrier Organization and Name	Assignment rate as percent of total claims processed ASP	Denial rate: Total PCDENPR	Assigned PCDENPRA	Unassigned (Percent of Total Claims Processed) PCDENPRU	Investigation rates: Total PCINV	Assigned PCINVA	Unassigned PCINVU
Total U.S.A.	51.1	6.1	5.3	7.0	11.0	7.1	15.1
Blue Shield							
01 BC/BS of Alabama	66.9	4.1	2.9	6.6	14.3	11.4	20.1
02 BC/BS of Arkansas	54.4	4.0	2.9	5.4	8.6	6.0	11.9
03 California Physicians Service	72.2	6.2	5.1	9.3	8.4	4.9	17.6
04 Colorado Physicians Service	52.6	5.5	4.4	6.7	12.7	10.0	15.7
05 Delaware BC/BS	59.1	4.0	2.5	6.2	10.3	5.0	18.0
06 Medical Service of Washington, D.C.	45.2	4.7	3.9	5.4	10.0	8.7	11.0
07 Blue Shield, Florida	30.0	5.9	5.5	6.0	18.9	10.7	22.4
08 Illinois Medical Service	52.7	13.0	16.6	9.1	6.5	3.4	9.9
09 Mutual Medical Service, Indiana	33.1	6.0	5.6	6.2	14.4	9.3	17.0
10 Iowa Medical Service	31.9	5.0	5.0	5.0	7.6	7.9	7.5
11 Blue Shield of Kansas	41.3	5.2	4.0	6.0	12.5	7.2	16.3
12 Kansas Physicians Service	54.2	4.5	3.4	5.9	9.8	7.6	12.5
13 Maryland Blue Shield	59.9	6.7	6.4	7.1	10.2	5.3	17.5
14 Massachusetts Blue Shield	76.0	5.4	4.2	9.3	6.9	4.2	15.8
15 Minnesota Medical Service	34.2	6.0	7.0	5.5	10.4	8.3	11.5
16 Michigan Medical Service	69.3	5.9	5.7	6.4	10.9	7.2	19.4
17 Montana Physicians Service	22.8	6.3	7.2	6.0	11.4	10.7	11.7
18 New Hampshire-Vermont Physicians Service	59.1	4.5	3.8	5.5	6.7	2.7	12.4
19 Genesee Valley Medical Service, Inc.	59.0	5.2	4.0	6.9	10.7	8.7	13.4
20 BC/BS Greater New York	48.2	6.1	6.1	6.0	12.3	10.8	13.7

TABLE 7-9 (continued)

Carrier Organization and Name	Assignment rate as percent of total claims processed	Denial rate:			Investigation rates:		
		Total	Assigned	Unassigned (Percent of Total Claims Processed)	Total	Assigned	Unassigned
	ASP	PCDENPR	PCDENPRA	PCDENPRU	PCINV	PCINVA	PCINVU
Blue Shield (continued)							
21 Blue Shield of Western New York	56.7%	8.6 %	5.6 %	12.5 %	9.8 %	7.1 %	13.4 %
22 North Dakota Physicians Service	33.2	3.5	3.1	3.7	8.2	9.7	7.4
23 Pennsylvania Blue Shield	62.9	5.5	4.4	7.3	11.9	5.5	22.8
24 Rhode Island Physicians Service	77.2	3.4	3.0	4.5	3.1	1.5	8.5
25 Blue Shield of South Carolina	63.1	4.8	4.5	5.5	9.8	8.5	12.0
26 South Dakota Medical Service	32.0	4.9	5.1	4.8	11.9	8.3	13.5
27 Group Medical and Surgical Service, Texas	58.3	5.8	4.8	7.1	13.8	10.4	18.6
28 Utah Blue Shield	46.9	5.2	4.6	5.7	13.8	12.1	15.4
29 Washington Physicians Service	41.1	6.8	5.4	7.9	11.7	7.2	14.8
30 Surgical Care, (Milwaukee, Wisconsin)	54.3	6.9	5.3	8.9	6.7	2.2	12.1
31 Wisconsin Physicians Service	37.8	7.8	9.9	6.5	8.0	6.9	8.6
Commercial for one area							
38 Connecticut General	39.1	7.7	8.8	6.9	13.2	4.4	18.9
39 Connecticut Casualty, Illinois	34.9	7.0	6.5	7.2	11.6	8.4	13.3
45 General American Life, Missouri	44.3	5.7	3.4	7.5	17.8	6.0	27.1
49 Mutual of Omaha-Nebraska	37.1	5.9	5.1	6.3	12.4	7.8	15.1

TABLE 7-9 (continued)

Carrier Organization and Name	Assignment rate as percent of total claims processed	Denial rate: Total	Assigned	Unassigned (Percent of Total Claims Processed)	Total	Assigned	Unassigned
	ASP	PCDENPR	PCDENPRA	PCDENPRU	PCINV	PCINVA	PCINVU
Commercial for one area (continued)							
52 Occidental Life, California	22.3%	8.4%	6.4%	9.0%	10.1%	5.7%	11.4%
53 Pan American Life Insurance, Louisiana	53.0	10.0	11.1	8.8	6.4	2.9	10.3
60 Union Mutual Life Insurance, Maine	72.0	3.2	2.6	4.7	11.9	8.5	20.5
Commercial Multi area							
Prudential	52.3	5.5	4.7	6.3	8.7	4.9	12.9
54 Prudential, Georgia	59.7	4.9	3.8	6.6	11.9	6.6	19.7
55 Prudential, New Jersey	48.4	5.8	5.8	5.9	6.2	3.6	8.6
56 Prudential, North Carolina	52.7	5.4	3.9	7.1	11.0	5.5	17.1
Metropolitan	57.5	6.5	4.4	9.4	8.8	7.0	11.2
47 Metropolitan Life Insurance, Kentucky	56.9	6.8	4.6	9.6	10.4	9.2	12.1
48 Metropolitan Life Insurance, New York	57.9	6.3	4.2	9.3	7.6	5.4	10.6
Travelers	55.8	5.1	3.8	6.7	14.0	9.4	19.8
57 Travelers, Minnesota	31.6	5.5	4.9	5.8	11.5	8.4	12.9
58 Travelers, Mississippi	73.9	4.0	3.1	6.5	14.0	10.2	25.0
59 Travelers, Virginia	56.9	5.8	4.2	8.0	15.9	9.0	25.1
Nationwide	36.5	8.4	8.1	8.5	16.3	11.2	19.2
50 Nationwide Mutual Insurance, Ohio	32.7	8.7	9.2	8.5	17.0	12.3	19.2
51 Nationwide Mutual Insurance, West Virginia	57.0	6.3	4.8	8.4	12.5	7.8	18.7
Equitable	46.0	5.7	4.7	6.6	9.3	6.3	11.7
41 Equitable, Idaho	27.0	5.9	4.7	6.3	10.6	7.7	11.7
42 Equitable, New Mexico	48.5	6.3	5.2	7.3	10.0	7.5	12.3
43 Equitable, Tennessee	49.8	5.4	4.5	6.4	8.6	5.9	11.4
44 Equitable, Wyoming	19.6	8.1	7.8	8.2	14.2	10.9	15.0

TABLE 7-9 (continued)

Carrier Organization and Name	Assignment rate as percent of total claims processed	Denial rate:			Investigation rates:		
		Total	Assigned	Unassigned (Percent of Total Claims	Total	Assigned Processed)	Unassigned
	ASP	PCDENPR	PCDENPRA	PCDENPRU	PCINV	PCINVA	PCINVU
Aetna	25.3%	6.6%	6.8%	6.6%	9.9%	6.7%	11.0%
32 Aetna, Alaska	40.3	9.0	9.0	9.0	9.8	8.6	10.7
33 Aetna, Arizona	24.9	6.3	4.6	6.8	8.4	4.1	9.8
34 Aetna, Hawaii	37.3	5.3	5.3	5.3	7.7	6.6	8.4
35 Aetna, Nevada	39.4	5.9	5.5	6.1	11.7	9.6	13.1
36 Aetna, Oklahoma	21.9	6.8	8.3	6.4	11.0	6.3	12.3
37 Aetna, Oregon	20.7	7.5	9.4	7.1	10.9	9.0	11.4
GHI							
46 Group Health Incorporated, New York	35.3	7.4	9.3	6.4	4.0	4.1	4.0
61 Group Health Incorporated, Florida	51.6	3.2	2.4	4.0	8.1	8.1	8.1
Public							
40 Department of Public Welfare Oklahoma	97.2	4.8	4.5	15.1	3.5	3.2	13.2

Sources: Part B Workload File I Printouts PPAGC154 1/03/78 and DAMGC064 11/30/78.

TABLE 7-10

BILLED CHARGE PER CLAIM AND REDUCTION OF BILLED CHARGES, BY CARRIER, FY 1976

Carrier Organization and Name	Percent of claims where billed charge was reduced			Average billed charge for total claims paid plus claims applied toward deductible					
				Before reduction			After reduction		
	Total REDBIL	Assigned REDBILA	Unassigned REDBILU	Total AVBILL	Assigned AVBILLA	Unassigned AVBILLU	Total AVBILR	Assigned AVBILRA	Unassigned AVBILRU
Total U.S.A.	75.8%	73.2%	78.5%	$78.0	$72.4	$84.1	$63.3	$58.6	$68.4
Blue Shield									
01 BC/BS of Alabama	70.8	70.6	71.1	65.6	59.6	78.2	54.8	49.8	65.3
02 BC/BS of Arkansas	76.9	75.3	78.8	58.2	54.1	63.3	48.8	45.8	52.5
03 California Physicians Service	83.9	82.5	87.8	68.4	61.2	87.9	53.6	48.0	68.9
04 Colorado Physicians Service	76.4	74.7	78.3	59.1	55.8	62.9	49.9	47.5	52.6
05 Delaware BC/BS	74.4	69.6	81.7	74.9	68.5	84.6	61.3	53.6	72.8
06 Medical Service of Washington, D.C.	74.4	70.7	77.5	73.0	72.7	73.3	58.6	58.3	58.9
07 Blue Shield, Florida	72.2	66.0	74.9	95.0	94.1	95.4	75.3	75.5	75.2
08 Illinois Medical Service	74.9	71.6	78.3	114.0	98.8	129.4	93.4	80.9	106.3
09 Mutual Medical Service, Indiana	65.7	51.2	72.8	72.5	56.6	80.4	60.8	48.8	66.8
10 Iowa Medical Service	76.4	71.7	78.6	71.2	66.6	73.3	57.9	54.4	59.6
11 Blue Shield of Kansas	77.0	72.9	80.0	80.2	78.6	81.3	66.4	65.1	67.3
12 Kansas Physicians Service	72.7	70.3	75.6	57.6	59.2	55.6	49.1	50.4	47.6
13 Maryland Blue Shield	66.3	61.1	74.0	78.5	79.3	77.4	64.2	64.6	63.6
14 Massachusetts Blue Shield	71.9	72.3	70.7	63.5	64.1	61.6	51.0	51.6	49.0
15 Minnesota Medical Service	76.8	77.3	76.5	66.5	61.7	69.0	56.9	53.3	58.7
16 Michigan Medical Service	71.6	66.7	82.6	62.1	58.4	70.5	47.1	45.0	51.9
17 Montana Physicians Service	82.8	77.6	84.3	65.5	59.4	67.2	55.2	50.7	56.5
18 New Hampshire-Vermont Physicians Service	71.9	66.9	79.2	39.5	38.3	41.3	33.0	32.6	33.5
19 Genesee Valley Medical Service, Inc.	81.7	81.7	81.7	80.4	94.0	60.1	66.7	78.6	49.0
20 BC/BS Greater New York	77.5	78.1	77.0	85.3	101.5	70.3	65.0	76.6	54.2

TABLE 7-10 (continued)

BILLED CHARGE PER CLAIM AND REDUCTION OF BILLED CHARGES, BY CARRIER, FY 1976

Carrier Organization and Name	Percent of claims where billed charge was reduced			Average billed charge for total claims paid plus claims applied toward deductible					
				Before reduction			After reduction		
	Total REDBIL	Assigned REDBILA	Unassigned REDBILU	Total AVBILL	Assigned AVBILLA	Unassigned AVBILLU	Total AVBILR	Assigned AVBILRA	Unassigned AVBILRU
Blue Shield (continued)									
21 Blue Shield of Western New York	77.5%	77.2%	78.0%	$78.7	$80.3	$76.4	$ 67.5	$69.0	$64.2
22 North Dakota Physicians Service	83.2	77.1	86.3	71.8	70.3	72.6	60.2	59.2	60.8
23 Pennsylvania Blue Shield	69.5	67.4	73.1	86.9	91.3	79.1	71.8	74.7	66.6
24 Rhode Island Physicians Service	76.3	75.1	80.4	36.7	38.7	30.0	26.8	27.9	22.8
25 Blue Shield of South Carolina	78.1	77.0	79.9	59.4	56.6	64.3	49.0	46.6	53.0
26 South Dakota Medical Service	85.4	82.7	86.7	87.6	63.8	98.7	71.4	51.5	80.8
27 Group Medical and Surgical Service, Texas	78.8	76.6	82.0	77.2	69.2	88.8	63.3	57.0	72.3
28 Utah Blue Shield	76.2	72.6	79.3	83.1	75.6	89.9	67.8	63.4	71.8
29 Washington Physicians Service	84.4	81.5	86.5	59.3	50.1	66.0	48.8	41.5	54.1
30 Surgical Care (Milwaukee, Wisconsin)	75.3	67.8	84.6	72.0	54.4	93.6	59.1	45.1	76.2
31 Wisconsin Physicians Service	85.4	75.9	91.1	74.1	59.6	82.6	61.6	49.8	68.6
Commercial for one area									
38 Connecticut General	76.8	71.5	80.1	83.3	72.2	90.2	69.4	60.7	74.8
39 Connecticut Casualty, Illinois	76.6	71.6	79.2	99.0	71.6	113.8	81.9	60.1	93.7
45 General American Life, Missouri	71.8	67.9	75.0	84.2	61.7	102.9	72.2	53.1	88.1
49 Mutual of Omaha-Nebraska	72.8	60.9	79.8	90.8	65.3	106.1	77.4	56.4	90.0

TABLE 7-10 (continued)

Carrier Organization and Name	Percent of claims where billed charge was reduced			Average billed charge for total claims paid plus claims applied toward deductible					
				Before reduction			After reduction		
	Total REDBIL	Assigned REDBILA	Unassigned REDBILU	Total AVBILL	Assigned AVBILLA	Unassigned AVBILLU	Total AVBILR	Assigned AVBILRA	Unassigned AVBILRU
Commercial for one area (continued)									
52 Occidental Life, California	84.4%	79.8%	85.8%	$108.5	$115.5	$106.4	$85.4	$91.6	$83.6
53 Pan American Life Insurance, Louisiana	75.4	73.4	77.6	84.4	58.3	113.2	70.4	48.8	94.2
60 Union Mutual Life Insurance, Maine	66.2	65.1	69.1	58.6	61.5	51.1	50.7	53.3	43.9
Commercial Multi area									
Prudential	76.0	72.9	79.4	80.6	79.7	81.6	66.6	65.9	67.3
54 Prudential, Georgia	79.5	77.8	82.3	71.4	59.7	89.3	59.2	49.7	73.7
55 Prudential, New Jersey	74.2	69.6	78.5	85.4	96.4	75.0	69.9	78.8	61.5
56 Prudential, North Carolina	75.7	73.2	78.7	80.3	71.9	90.0	67.6	60.7	75.5
Metropolitan	79.9	76.3	84.9	76.5	64.3	94.1	61.7	52.0	75.7
47 Metropolitan Life Insurance, Kentucky	81.5	79.3	84.5	77.7	49.2	117.4	62.6	39.3	94.9
48 Metropolitan Life Insurance, New York	78.7	74.2	85.2	75.7	74.9	76.9	61.1	60.9	61.5
Travelers	68.3	62.1	76.5	82.2	66.8	102.4	69.5	56.4	86.5
57 Travelers, Minnesota	82.3	77.9	84.3	124.2	107.6	131.9	105.7	90.7	112.8
58 Travelers, Mississippi	55.4	53.0	62.6	54.8	49.2	71.3	46.9	42.4	60.0
59 Travelers, Virginia	70.2	66.9	74.9	76.9	71.5	84.3	63.9	59.6	69.8
Nationwide	83.8	86.0	82.4	86.6	75.6	92.9	72.1	63.5	77.0
50 Nationwide Mutual Insurance, Ohio	85.8	91.1	83.3	92.1	84.7	95.7	76.8	71.2	79.5
51 Nationwide Mutual Insurance, West Virginia	72.8	71.0	75.4	57.2	49.0	68.6	47.4	40.9	56.4
Equitable	80.2	76.4	83.5	75.3	67.7	81.9	60.5	55.0	65.2
41 Equitable, Idaho	85.7	74.6	89.9	70.8	58.9	75.3	56.2	47.6	59.4
42 Equitable, New Mexico	78.1	74.0	82.0	67.7	66.4	68.9	56.8	56.5	57.0
43 Equitable, Tennessee	79.6	77.1	82.2	77.7	68.7	86.7	61.9	55.2	68.7
44 Equitable, Wyoming	84.2	79.6	85.3	77.7	70.8	79.5	61.3	56.4	62.5

TABLE 7-10 (continued)

Carrier	Organization and Name	Percent of claims where billed charge was reduced			Average billed charge for total claims paid plus claims applied toward deductible					
					Before reduction			After reduction		
		Total REDBIL	Assigned REDBILA	Unassigned REDBILU	Total AVBILL	Assigned AVBILLA	Unassigned AVBILLU	Total AVBILR	Assigned AVBILRA	Unassigned AVBILRU
	Aetna	56.2%	51.6%	57.8%	$ 86.5	$ 89.3	$ 85.6	$ 74.7	$ 77.6	$ 73.7
32	Aetna, Alaska	58.2	55.0	60.4	119.1	117.7	120.1	101.1	101.3	101.0
33	Aetna, Arizona	54.7	51.1	56.0	93.5	98.8	91.7	80.4	86.0	78.6
34	Aetna, Hawaii	56.7	57.2	56.3	56.4	57.1	56,0	48.5	49.1	48.2
35	Aetna, Nevada	51.2	47.9	53.4	103.2	139.2	79.7	88.0	117.5	68.6
36	Aetna, Oklahoma	57.3	49.6	59.4	93.4	88.6	94.7	81.0	77.8	81.9
37	Aetna, Oregon	57.7	51.5	59.3	81.3	80.0	81.6	70.3	70.3	70.3
	GHI									
46	Group Health Incorporated, New York	83.8	84.8	83.3	81.3	100.9	70.9	62.4	76.2	55.2
61	Group Health Incorporated, Florida	70.1	69.1	71.2	81.3	89.6	72.3	65.9	72.8	58.4
	Public									
40	Department of Public Welfare Oklahoma	63.9	64.1	56.2	51.7	51.4	63.8	42.3	42.0	52.2

Sources: Part B Workload File I Printouts PPAGC 154 1/03/78 and DAMGC 064 11/30/78.

TABLE 7-11

MEAN PROCESSING TIME, PERCENT OF CLAIMS PROCESSED WITHIN 15 DAYS, AND PERCENT PROCESSED IN OVER 90 DAYS, BY CARRIER, FY 1976

Carrier Organization and Name	Mean processing time			1 - 15 Days			91+ Days		
	Total TPM	Assigned TPMA	Unassigned TPMU	Total PCGA15	Assigned PCGA15A	Unassigned PCGA15U	Total PCGE91	Assigned PCGE91A	Unassigned PCGE91U
Total U.S.A.	15.1	13.6	16.6	71.3	76.0	66.5	0.9%	0.9	1.1
Blue Shield									
01 BC/BS of Alabama	21.2	20.6	22.3	45.5	45.0	46.6	1.1	1.0	1.3
02 BC/BS of Arkansas	10.9	10.5	11.3	83.7	84.1	83.2	0.3	0.3	0.3
03 California Physicians Service	13.0	12.2	15.0	78.6	81.5	71.1	0.9	0.8	1.1
04 Colorado Physicians Service	17.1	16.4	17.8	63.5	65.1	61.7	0.8	0.7	0.9
05 Delaware BC/BS	27.0	25.7	28.9	18.5	20.6	15.6	0.6	0.5	0.7
06 Medical Service of Washington, D.C.	10.8	10.3	11.2	83.1	85.0	81.6	0.7	0.7	0.7
07 Blue Shield, Florida	23.9	22.0	24.7	48.9	60.8	43.7	2.3	2.4	2.2
08 Illinois Medical Service	11.6	10.3	13.0	80.0	83.7	75.9	0.4	0.5	0.4
09 Mutual Medical Service, Indiana	9.4	7.7	10.3	85.5	91.6	82.5	0.0	0.0	0.0
10 Iowa Medical Service	12.9	10.8	13.9	73.4	78.9	70.8	1.5	0.9	1.8
11 Blue Shield of Kansas	20.3	17.9	21.9	60.5	67.8	55.4	2.2	2.0	2.3
12 Kansas Physicians Service	15.4	14.3	16.6	72.1	74.3	69.5	0.8	0.6	0.9
13 Maryland Blue Shield	20.1	18.4	22.5	51.3	56.8	42.9	1.2	1.1	1.3
14 Massachusetts Blue Shield	9.9	8.8	13.4	86.7	90.5	74.7	0.3	0.3	0.2
15 Minnesota Medical Service	17.4	16.2	18.1	54.5	59.0	52.1	0.5	0.3	0.6
16 Michigan Medical Service	15.4	13.8	19.0	70.3	74.6	60.5	0.9	0.7	1.4
17 Montana Physicians Service	11.8	12.1	11.7	82.8	83.1	82.7	0.3	0.4	0.3
18 New Hampshire-Vermont Physicians Service	14.0	13.2	15.3	73.6	76.0	70.2	0.6	0.5	0.8
19 Genesee Valley Medical Service, Inc.	25.7	20.5	33.3	54.2	65.2	38.5	3.2	2.7	4.0
20 BC/BS Greater New York	16.6	16.9	16.4	69.3	69.0	69.5	1.3	1.5	1.2

TABLE 7-11 (continued)

Carrier Organization and Name	Mean processing time: Total TPM	Assigned TPMA	Unassigned TPMU	1 - 15 Days: Total PCGA15	Assigned PCGA15A	Unassigned PCGA15U	91+ Days: Total PCGE91	Assigned PCGE91A	Unassigned PCGE91U
Blue Shield (continued)									
21 Blue Shield of Western New York	32.5	30.4	35.2	43.5%	46.7%	39.3%	5.8%	4.3%	7.7%
22 North Dakota Physicians Service	9.2	9.3	9.2	88.3	87.5	88.7	0.2	0.2	0.2
23 Pennsylvania Blue Shield	11.1	9.1	14.5	81.0	88.8	67.7	0.2	0.3	0.2
24 Rhode Island Physicians Service	7.5	7.6	6.9	93.6	93.8	92.8	0.4	0.4	0.4
25 Blue Shield of South Carolina	11.1	9.9	13.2	83.7	87.3	77.6	0 4	0.3	0.5
26 South Dakota Medical Service	9.7	9.0	10.0	85.9	88.1	84.9	0.2	0.2	0.2
27 Group Medical and Surgical Service, Texas	14.3	13.0	16.1	75.2	77.9	71.3	0.6	0.5	0.7
28 Utah Blue Shield	21.0	20.5	21.4	45.9	48.1	44.0	0.8	0.7	0.9
29 Washington Physicians Service	10.2	9.4	10.8	83.2	85.5	81.5	0.3	0.3	0.3
30 Surgical Care (Milwaukee, Wisconsin)	9.1	7.9	10.5	85.3	88.9	81.0	0.3	0.2	0.3
31 Wisconsin Physicians Service	18.4	16.1	19.8	61.3	64.4	59.3	0.5	0.5	0.5
Commercial for one area									
38 Connecticut General	13.5	13.3	13.6	73.0	76.3	70.8	0.2	0.3	0.1
39 Connecticut Casualty, Illinois	19.6	13.6	22.8	53.5	77.3	40.7	0.8	0.4	1.1
45 General American Life, Missouri	14.8	11.8	17.2	72.9	83.4	64.6	1.0	0.6	1.3
49 Mutual of Omaha-Nebraska	16.3	14.8	17.3	59.7	66.9	55.5	0.2	0.2	0.3

TABLE 7-11 (continued)

Carrier Organization and Name	Mean processing time: Total TPM	Assigned TPMA	Unassigned TPMU	1 - 15 Days: Total PCGA15	Assigned PCGA15A	Unassigned PCGA15U	91+ Days: Total PCGE91	Assigned PCGE91A	Unassigned PCGE91U
Commercial for one area (continued)									
52 Occidental Life, California	19.5	18.1	19.9	61.6%	65.0%	60.6%	1.4%	1.5%	1.4%
53 Pan American Life Insurance, Louisiana	19.9	17.4	22.7	55.4	62.8	47.0	1.9	1.4	2.6
60 Union Mutual Life Insurance, Maine	13.6	12.7	16.0	78.1	81.1	70.5	0.8	0.7	1.2
Commercial Multi area									
Prudential	19.8	17.9	21.9	56.8	60.1	53.2	1.9	1.7	2.2
54 Prudential, Georgia	19.9	18.1	22.7	57.3	61.3	51.5	2.1	1.5	2.9
55 Prudential, New Jersey	21.5	19.3	23.5	50.7	53.1	48.5	2.2	2.1	2.3
56 Prudential, North Carolina	16.0	14.8	17.4	69.6	72.9	66.0	1.1	0.9	1.3
Metropolitan	21.0	19.4	23.2	57.1	62.5	50.0	2.4	2.1	2.6
47 Metropolitan Life Insurance, Kentucky	19.0	16.3	22.5	60.9	69.2	49.9	2.0	1.6	2.6
48 Metropolitan Life Insurance, New York	22.5	21.5	23.7	54.5	57.7	50.0	2.6	2.6	2.6
Travelers	6.9	6.4	7.5	93.4	94.4	92.1	*	*	*
57 Travelers, Minnesota	6.9	6.8	6.9	94.7	94.8	94.7	*	*	*
58 Travelers, Mississippi	7.0	6.6	8.5	93.4	94.6	89.8	*	*	0.1
59 Travelers, Virginia	6.7	6.0	7.6	92.4	93.9	90.4	*	*	*
Nationwide	9.2	7.6	10.1	83.5	90.1	79.6	0.1	0.1	0.1
50 Nationwide Mutual Insurance, Ohio	9.3	7.9	10.0	82.7	89.1	79.7	0.1	0.1	0.1
51 Nationwide Mutual Insurance, West Virginia	8.4	6.6	10.7	87.3	93.2	79.5	0.1	0.1	0.1
Equitable	13.3	12.9	13.6	76.6	78.3	75.2	0.6	0.7	0.6
41 Equitable, Idaho	10.8	10.2	11.0	80.7	82.7	79.9	0.3	0.3	0.3
42 Equitable, New Mexico	22.4	21.0	23.6	50.3	53.4	47.1			
43 Equitable, Tennessee	11.5	11.2	11.8	82.5	83.6	81.4	0.5	0.5	0.4
44 Equitable, Wyoming	15.2	14.8	15.3	65.3	67.5	64.8	0.3	0.3	0.3

TABLE 7-11 (continued)

Carrier Organization and Name	Mean processing time			1 - 15 Days			91+ Days		
	Total TPM	Assigned TPMA	Unassigned TPMU	Total PCGA15	Assigned PCGA15A	Unassigned PCGA15U	Total PCGE91	Assigned PCGE91A	Unassigned PCGE91U
Aetna	10.3	10.1	10.4	83.9	84.7	83.7	0.1%	0.2	0.1%
32 Aetna, Alaska	9.7	9.7	9.8	83.4	83.0	83.7	0.2	0.1	0.2
33 Aetna, Arizona	8.2	8.3	8.2	90.0	89.9	90.1	0.1	0.2	0.1
34 Aetna, Hawaii	9.0	9.2	8.8	90.3	88.9	91.1	0.1	0.1	0.1
35 Aetna, Nevada	10.5	10.4	10.6	84.2	84.8	83.8	0.1	0.2	0.1
36 Aetna, Oklahoma	12.0	11.1	12.3	78.1	82.3	77.1	0.1	0.1	0.2
37 Aetna, Oregon	11.4	11.9	11.3	80.2	78.5	80.7	0.1	0.1	0.1
GHI									
46 Group Health Incorporated, New York	36.6	37.8	36.0	27.0	25.3	27.9	2.2	2.9	1.9
61 Group Health Incorporated, Florida	22.5	21.5	23.6	40.6	44.5	36.4	0.8	0.9	0.8
Public									
40 Department of Public Welfare Oklahoma	17.7	17.3	30.9	55.7	56.5	27.6	0.5	0.5	1.8

* Less than 0.1%

Sources: Part B Workload File I and Processing Time File II Printouts PPAGC154 1/03/78 and DAMGC064 11/30/78.

CHAPTER 8

FEE DETERMINATION

Previous chapters reported on Medicare fee distributions and presented carrier variations in reasonable charge determination and in performance speed and other aspects of claims processing. This information is incorporated into the analysis, presented in Chapter 8, of the effect of carrier practices and performance on Medicare fees. Factor analysis and multiple regression techniques were used, and the influence of the socioeconomic environment on fees was taken into consideration in the analysis.

Introduction

The analysis of the effect of carrier practices on the determination of physician fees under Medicare that is reported in this chapter is addressed to assessment of the implications of the present mode of administration. Part B is administered by numerous carriers which are either nonprofit organizations (Blue Shield or GHI), or commercial insurance companies (single state or multi-state firms).[1/] A uniform approach to pricing is a prerequisite to achieving a uniform benefit to enrollees living in different parts of the country, preventing windfall gains to some practitioners at the expense of others, and guaranteeing to the aged access to services that they need. Previous research (cited in Chapter 4) has indicated important facts about the fee structure under Medicare. The Institute of Medicine Study revealed the significance of certain socioeconomic factors in explaining why the same procedure cost different - sometimes vastly different - amounts in different counties. Schieber et al. explored the fees charged by specialists and general practitioners for the same listed procedure. The relatively high levels of GP fees for laboratory work (in contrast to other professional activities for which specialist fees are higher compared to those of GPs) may have shown one way in which physicians respond to competition. That is, GPs may have to charge less than specialists for office visits in order to retain a clientele but may reduce the income gap between themselves and specialists by charging as much or more for diagnostic tests. The Huang and Koropecky study established the effect on fees of divergences among carriers as to frequency of fee update and use of ceilings or relative value scales to replace the reasonable charge process, and also showed that type of carrier made a difference in fees.

In all these studies prevailing charges were used as the measure of Medicare fee levels.

1/ Plus one state government department.

CUNY's study was built on the previous work but was able to incorporate new data sources and its method included certain new elements. Both prevailing and 50th percentile fees were used as measures of fees. The latter is of course a more accurate measure of central tendency. Our analysis shows that, by and large, factors that influence one measure were also significant for the other.

Conceptual Framework

In approaching the study of how fees were affected by carrier practices, a wide variety of variables under three broad categories were considered. These are: carrier discretionary practices, carrier administrative performance, and socioeconomic forces. The discretionary practices of carriers that were the original focus of the study were concerned with reasonable charge determination. A process of many stages, this task contains many opportunities of different interpretations of the basic regulations. These practices were identified by analyzing HCFA's questionnaire to regional offices. Sixteen [1/] practices were eventually classified and scaled on a dimension of "toughness"- presumed ability to keep prices down.[2/] (The detailed analysis of the discretionary practices questionnaire is reported in Chapter 6.) While some major issues of divergence among carriers are not included in the source questionnaire, it did provide empirical data not previously available for study. Among the possibly significant practices were those concerning claims data merger or comparison, teaching-setting claims, and pricing methods used in the absence of usual information needed for the RCP.

The whole claims processing activity can also be viewed as a form of carrier behavior. A statistical source that reported on carrier workload and pro-

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1/ Four additional practices were alternative ways of scoring practices among the seventeen.

2/ The file of IM 75-53 information is referred to as Discretionary Practices.

cessing time made it possible to develop certain rates and measures that reflect both direction and efficiency of administrative activity. Speed in processing and extent of claims investigation, denial and reduction - all taken or derived from this source - were viewed as carrier attributes. They contained noticeable variance, as reported in Chapter 7. Also available was assignment rate, and most carrier performance attributes could be shown separately for assigned and unassigned claims.

The general reasoning behind the study is that what carriers do in setting reasonable charge levels is imposed on already existing market forces. These result in numerous price determinations expressed in submitted charges for individual encounters and services under Medicare. Carriers, by the rules they adopt for choosing the claims to be considered in the computation of prevailings, the specialty groupings they use, and the method of arriving at allowed charges for new doctors in an area and other circumstances not conforming to the reasonable charge process, can in theory modify the exact values for 50th percentile and prevailing fees that emerge from the distribution of fees in a given market. Whether such effects are substantial, and which of the practices have this power, would be disclosed by the empirical study. For the group of variables related to controlling the admission of specific claims for payment and the size of allowed charges in specific instances of service, the reason for a theoretical effect on fees is clearly dependent on doctors' responses. Claims investigation, denial and reduction activities are perceived in the medical community - by the practitioners directly involved and by others. Aggressive questioning of claims could lead to voluntarily reducing one's submitted charges (on assigned claims) in order to avoid these attentions, but denial or reduction by the carrier might lead to compensatory increases. (The practices, and the differences in their intensity with respect to assigned and unassigned claims, were also believed to be influential in determining assign-

ment rates, analysis of which is reported in Chapter 9.) The length of waiting time for payment could also be seen as a reason to charge more as an offset, although the usual tendency for a seller to associate delay with risk of non-payment may be weak in view of the established history of Medicare.

These workload variables were believed to be not completely independent of local market factors. For instance, more claims might be investigated when the pressure of demand was motivating physicians to draw more revenue from given services or from given Medicare patients by redescribing services or performing services on scanty justification. Similar interdependence might be found between reasonable charge practices and the local market for health care. It was obligatory to allow for the effects of socioeconomic factors on Medicare fees in order to assess the role of the carrier practice and performance differences accurately.

The resources for measuring socioeconomic influences for research of this kind have become very large as a result of the creation and expansion of DHEW's Area Resource File. Data on population, mortality, economic activity and poverty, health facilities and personnel, and other subjects that were presented at the county level were aggregated for the study to the carrier level, which is appropriate for an examination of fee differences due to carrier practices. This federal data source was supplemented by the American Medical Association's statistics on non-federal physicians who are active in patient care for major specialty groupings, by counties. For socioeconomic forces, the problem was more one of selection than of absent variables, although, despite its riches, the ARF lacks an inventory of health status variables, refined measures of physician supply and other desirable statistics. A first selection from the ARF was based on finding major variables:

. likely to be associated with demand for health services in the general population and among the aged. (The former is important because physician charges to Medicare patients are assumed to have a relation

to charges to non-elderly patients.) Such measures as per capita income and aged as a percent of the population were in this group.

- indicative of supply of office-based physician services, with which Part B is involved. Present supply was partitioned into specialty types and adjusted by consideration of variables reflecting professional alternatives to patient care (teaching activities).
- showing other influences related to production and use of MD services and their market prices.

According to the reasoning used, based on the literature, per capita income is favorable to demand and thus to higher charges by physicians through its effect on ability to pay. It is also associated with education, which may be conducive to seeking more care and care of high quality. However, income is also indicative of superior health status and of capacity to produce health and some health services at home. Overall, the positive effects on fees were expected to dominate.

The aged as a percent of the population is a variable that should be favorable to demand because of health needs and entry into Medicare entitlement. However, infirmity reducing access to care, and low income relative to younger population groups act as offsets. Demand for different specialties may not be equally affected. While adjustment for income level and health status seems an obvious solution to the mixed theoretical effect, needed data are not available to make the adjustments. High mortality rates for the aged could be indicative of intense need, translated into demand, for care. However, patients at high risk of death after a long illness may have exhausted their ability to pay, and this would have a countervailing effect.

Included in the third group are several hospital-related variables that have capacity to interact; their net effect on fees is not easy to predict. Hospital activities of physicians reduce the physician supply available for office-based care and this applies an upward force to fees. However, the hospital is also an alternative source of patient care. Hospital expense per bed is

indicative of more elaborate facilities (i.e., supply, which in turn reflects a demand for costly services) - but it also has an impact on out-of-pocket costs and ability to pay doctors.

It was evident that many of the available socioeconomic variables were highly intercorrelated and, furthermore, that some had two or more contradictory theoretical effects. The purpose of selecting from this set was not, however, to construct a refined theoretical model, but to assure that when isolating the effect of carrier behavior on fees, substantial control for market forces was provided through inclusion of health economic variables. The ones that were ultimately used were in effect proxies for a set of measures related to demand for and supply of health services, and interpretation of their meaning should take this into consideration.

The interrelations among workload variables as revealed by the zero-order correlation matrix are pertinent to predicting expected effects on fees. One question of interest is whether intercorrelations among the variables result in a packed meaning for variables that do enter the equations. That is, is denial rate, for example, important by reason of its own economic consequences for the doctor, or is it a proxy, in effect, for investigation and claims reduction?

The zero-order correlations show substantial independence (absence of correlation coefficients equal to or greater than .50) for most workload variables. The exception is that stock of pending claims is correlated with processing time: they are alternative measures of the same events. However, investigation rate, denial rate, and reduction rate each stand alone. This means that carriers with highest investigation rates do not necessarily have highest denial rates. To the question posed above the correct answer evidently is that the measures that prove significant are not proxies for other claims control activities of the same

carrier. (This also implies that efficiency in terms of claims control is not a unitary attribute of carriers.)

Also relevant are the distinction drawn by carriers between assigned and unassigned claims in investigation, reduction, and denial, and the corresponding distinction that physicians draw in their responses by way of fee behavior. As shown by zero-order correlations, each of the three rates, measured for assigned claims, tends to move together with the corresponding rate for unassigned claims. However, physicians would have reasons to respond differentially. While it is an inconvenience (resource-consuming event) to be investigated for both types of claims, denial and reduction affect revenue only for assigned claims and therefore one would expect only the denial and reduction rates of assigned claims to result in compensatory fee increases.

Method of Study

The method employed was to select variables for inclusion in regression analysis from the three sources described above (Area Resource File, Workload and Processing Time File, and Discretionary Practices) by use of factor analysis. In all, 175 independent variables were considered (Table 8-1). This figure includes both variables in their original form as extracted from the data source and generated variables. Seventy variables were included in factor analysis and were reduced to 18 factors from which the variables to be included in regression analysis were selected (Table 8-2). The variables selected were those with highest factor loadings on the factors extracted from the data. The stepwise regression method was employed to insure that only the variables with the highest explanatory power and significant regression coefficients were included in the final equation. Thirty-eight independent variables were afforded the opportunity to enter the regression equations for the twelve dependent variables representing weighted and unweighted fee measures of 50th percen-

tile and prevailing fees for GPs and specialists, and an additional equation for SMI expenditure per enrollee. The analysis was performed for all carriers; and for Blue and all other carriers separately.[1/]

Results of Factor Analysis

The results of factor analysis are shown in Table 8-3. The SAS package with varimax rotation was used. The first factor extracted, which explained 22% of the variance in the system, can be interpreted as the interaction between supply and demand for medical services. The variables with highest loadings on this factor are: median family income, percent urban, population per active MD (total, medical, surgical, other[2/]), hospital expenditure per bed,[3/] and ratio of number of general hospitals to number of hospitals with diagnostic services.

The second factor extracted explained 12% of the variance in the system; it represents the speed with which carriers process claims. The variables with highest loadings on this factor are mean processing time (all claims, assigned claims, unassigned claims), and average stock pending.

An additional 9% of the total variance was explained by the third factor, which represents the physicians invoived in hospital-based programs. Highest loadings are found for: ratio of MDs to interns and residents (general hospitals, all hospitals), ratio of number of hospitals to number of internship and residency programs, and population per hospital-based MD.

The fourth factor, which added 8% to the explanation of the variance, expresses the bill reduction activities of the carriers, measured as the ratio of (number of claims reduced) to (claims processed and paid or applied to deductible). (Factor 11, which explained 3%, related to the dollar re-

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1/ Carrier 40, Department of Public Welfare-Oklahoma, was excluded since its jurisdiction overlaps with that of Aetna-Oklahoma.

2/ Not medical or surgical specialist or GP.

3/ Adjusted for hospitals not reporting expenditure but included in bed count.

duction of bills.) For Factor 5, which adds 7% to the explanation of the variance, the variables with highest loadings are discretionary practices 7, 8, 9, and 10, all dealing with merger or comparison of Medicare and non-Medicare claims in reasonable charge determination. Discretionary practices are also represented by six other factors. Factor 8 represents the pricing policy in absence of a customary (practices 16 and 20); factor 10 represents the minimum number of charges required for computation of customaries (practices 11 and 12); factor 12 represents pricing in absence of a prevailing(practice 17). Other practices represented are pricing of claims submitted by a"new man in town"(practice 19), the minimum number of customaries needed for computing prevailing charges and the treatment of token and extremes in computation of reasonable charges (practice 15, practice 3). All the discretionary practice factors together explain 25% of the total variance of the system.

Factor 6, which explains 6% of the variance, represents the potential and actual use of hospitals. The variables with highest loadings on this factor are: number of available bed-days per person (1970) and inpatient days in general and osteopathic hospitals per person (1970). Factor 7, representing the claims denial rate, explains 6% of the variance, and factor 9, standing for carrier investigation rate, explains 4%. Factor 14, which explains 2% of the variance, represents hospital resource use for long-term care facilities. Another 2% is explained by factor 15, expressing the percent of all MDs who are in general hospitals.

By selecting only those variables with high loadings on the factors, the number of variables included in the regression trials was reduced to 38.

Results of Regression Analysis

The method of stepwise regression was used. The first variable is selected by the stepwise program by applying the criterion that it has the

highest correlation coefficient with fees on the zero-order matrix, and that the coefficient is significant at .50. Each variable added and retained must not only contribute to the explanation of the variance, but must have a coefficient that is significant at .05. Variables that lose their significance following addition of subsequent variables meeting the stated criterion are deleted. The socioeconomic and program-related variables were expressed in scale-free units such as population per medical specialist, and alternatively, as ratios to the national mean for each variable. While regression results were unaffected by this, the latter mode gave a standardized interpretation to the coefficients. Discretionary practice variables were based on a non-parametric score ranging up to 4 at most; both the raw scores and the "ratio to mean" transformation were used in the respective analyses. Only the latter is reported.

The development of fee indices as a way of expressing inter-carrier differences in fees was explained earlier in Chapter 5. The operation made it possible to study 50th percentile and prevailing fees for GPs, specialists, and the two groups combined, and to do so for both unweighted fee values and fees weighted by local frequencies. All indices were based on 50 top Medicare procedures. In addition, SMI expenditures per enrollee were used to form an additional dependent variable.

Because of the possibility that carrier organization type would affect fees, as shown by Huang and Koropecky in an earlier period, separate regressions were run for "Blue" and "all other" carriers as well as for all carriers combined. This method also made it possible to see if different variables influence fees in the two types of carrier environment (as indeed was the case).

The regression results (Table 8-4) showed that for 12 equations analyzing determination of fee indices for all carriers between 63 and 75 percent of the variance was explained by the predictors considered. The explanations were

somewhat better for non-Blue than for Blue carriers. In 10 of 12 equations the Blue R^2 value was lower, most notably in the GP prevailings (.72 vs. .90).[1/] Analysis of residuals showed that they have no pattern and therefore that multilinear regression explains the relationship adequately. (Figure 8-1.)

The most important influence on fees came from the socioeconomic domain. Percent urban, which, as previously indicated, was associated with a health-economy demand/supply interaction factor, came into all 12 equations with a positive sign and explained a substantial share of the total variance (e.g., about 35% in the equation for "combined" MDs unweighted 50th percentile fees.) The variable representing the proportion of MDs in general hospitals entered the all-carrier equations and 10 of the 12 non-Blue equations with a positive effect on fees - but in none of the Blue equations did this variable enter with a significant coefficient. Other socioeconomic variables made single appearances: among the variables for population per physician, those for medical, surgical, and other specialties each entered once. Urban concentration raised fees, as did the diversion of part of the MD supply to hospital-based activities. Concentration of some of hospital bed supply in extended-care beds tended to lower 75th percentile fees in Blue carrier territories. This could be indicative of the association of acute-care bed supply with more demand for physician services. The variable for hospital teaching programs entered the weighted 75th percentile fee equation for all carriers with a sign that showed that presence of such programs had a negative effect on fees, when the percent of MDs in hospitals was taken into account. This could be explained by provision of patient care under the teaching programs as an alternative to office-based care.

Mortality of the aged was associated with higher fees in commercial carrier territory according to two equations for 50th percentile fee indices (special-

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1/ Coefficients of determination adjusted for the number of explanatory variables are shown in Table 8-5.

ist unweighted and GP weighted), and one equation for prevailings (GP unweighted). This conformed to expectation based on the reasoning that lower health status signifies higher demand. But caution should be used in interpretation owing to the crudeness of this variable as a health status indicator.[1/]

The discretionary practices of carriers had a definite but relatively minor impact on fees. The group with any measurable effect related to the pricing of claims of an individual MD who lacks a customary charge for a given procedure (number 16), pricing methods used for claims of an individual physician in the absence of a prevailing fee (number 17), comparison with other fee screens, and handling of pricing situations when there is a new doctor in town (number 19) or an established doctor lacking a customary (number 20). A combined score of non-pricing practices that had shown possible effect in preliminary trials failed to enter with one exception. None of the practices entered the Blue equation for GP 50th percentile unweighted.[2/] Generally, only one or two practices entered any given equation with a significant coefficient.

The workload variables failed to show an effect on fees for all carriers at the 50th percentile, but did have effects on specialist prevailings for all carriers. In the unweighted equation, the processing time for assigned claims was associated with higher fees,[3/] but that for unassigned claims had the opposite effect. In the weighted equation, frequency of bill reduc-

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1/ See Chapter 9.

2/ None entered the equation for the weighted version either, or for the "combined" 50th weighted Blue equation.

3/ Stock of pending claims, a related measure, also entered two equations, for non-Blue carriers only. For assigned claims, an increase in stock relative to claims processed tended to raise fees.

tion on unassigned claims lowered fees. Possibly the physicians reduce their fees to avoid difficulties with and for their patients in Medicare settlement.[1/] Since the rate of bill reduction on assigned claims is closely correlated with the rate for unassigned, a distinction may not be justified even though the reduction variable for the assigned group did not enter. The fee response to shorter processing time does conform with the expectation that physicians will seek compensation for the delay in payment. But the response of doctors to these dimensions of administrative performance is not fully revealed by analysis using aggregative measures. It would be worth looking into by direct inquiry and with attention paid to differences among specialties. Investigation rate did show a fee-lowering effect in the territories of commercial carriers, for prevailing fees within specialist and combined groups. Physicians may well have associated investigation with their fee demands and sought to reduce the inconvenience of an inquiry.

The failure of these variables to appear consistently should be considered a good reason for caution in ascribing influence or drawing policy conclusions. Also, the proportion of the variance explained was limited. This is true for both discretionary practices and workload items.

The borderline between Medicare fee and expenditure measures is an unclear one because the act of weighting fees for procedure mix (frequency of utilization) is not too different from measuring dollars spent per enrollee. Some underlying stability is given to SMI expenditure in different areas by the biological element in the utilization pattern of the aged, which is equivalent to applying a standardized set of quantity weights. This would be consistent with considering the SMI figures as a fee measure, but the variation in level and type of services utilized cannot be controlled for. Ultimately, it is most realistic to view SMI expenditure per enrollee as a measure of program cost which

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1/ Also, they may feel that their profile will be reduced anyway.

is to be explained by considering the factors used to analyze fees. Unlike the weighted fee index, it encompasses all Part B services and not just the top 50 procedures. The proportion of variance explained by our equations was similar to the results from the fee index equations. For all carriers, R^2 was .77. This was also the value of R^2 in the commercial-carrier equations, but the Blue equation had a slightly lower R^2. For all carriers, percent urban, physicians in general hospitals, and the presence of hospital teaching programs had a positive effect. These influences are similar to those already discussed in relation to fee indices. It is of interest that population per MD, in this context, had a negative effect. While there are possible explanations for this, it should be recalled that related variables in which doctors are classified by specialty (e.g., population per surgical specialist) do have the expected positive effect. Possibly, the hospital teaching programs took care of much of the demand represented, and this allowed the low-income population of the inner city to depress fees. Also, patients may have failed to get access to MDs to satisfy potential demand. Lower SMI expense per enrollee was associated with "strict" scores on selected discretionary practices tried as a group, but tough pricing methods for a new MD in a community had a positive effect. Although this was not expected, there may be an association with established doctors having less fear of competition from new entrants. Higher claims denial rates lowered SMI outlay per enrollee in an area, probably an obvious consequence of the pruning action itself. In non-Blue territory, <u>frequency</u> of claims reduction lowered SMI outlay, but the <u>amount</u> of reduction was associated with higher average outlays. Possibly, it reflected the high level of submitted charges before reduction.

The fee regression study shows that carrier practices have limited explanatory power. A diversity of practice and performance elements would have to be controlled by Medicare administration to reduce their influence to zero. This involves the difficulty of controlling physician response to fee control. The

non-assignment route in particular is available. So are the prescription of revisits and tests, and procedure enhancement. Retention of the reasonable charge process involves great regulatory difficulties in attaining more uniform and moderate fees.

TABLE 8-1 LIST OF VARIABLES

ORIGINAL VARIABLES, BY SOURCE AND SUBJECT

A.R.F.6 MAY 1977

	Column	Year	
			POPULATION, INCOME, SCHOOLING
CENSUS70	1230-1236	1970	Census population in hundreds
URBP070	1636-1641	1970	Urban population in hundreds
DENSITY	3933-3937	1970	Population/square mile
MAGED70	1238-1332	1970	Census male 65+ in hundreds
FAGED70	1333-1337	1970	Census female 65+ in hundreds
TOTFAM70	3718-3724	1970	Families
FAMINC69	3732-3736	1969	Median family income
AFDC75	3563-3568	1975	AFDC recipients
SCHOOL70	3666-3668	1970	Median school years completed
MORT6574	3309-3313	1974	Mortality age 65-74 years
MORT7584	3334-3338	1974	Mortality age 75-84 years
MORT85	3359-3363	1974	Mortality age 85+ years
M04	1258-1262	1970	Census male age 0-4 in hundreds
F04	1263-1267	1970	Census female age 0-4 in hundreds
M514	1268-1272	1970	Census male age 5-14 in hundreds
F514	1273-1277	1970	Census female age 5-14 in hundreds
M1524	1278-1282	1970	Census male age 15-24 in hundreds
F1524	1283-1287	1970	Census female age 15-24 in hundreds
			IDs
	0093-0094		Fips state code
	0095-0097		Modfips county code
	0158-0159		Federal region code
	0173-0173		AMA county group code
	0174-0181		County group urbanization code

TABLE 8-1 (CONT'D.) LIST OF VARIABLES

			HEALTH MANPOWER
MDGEN75	316-320	1975	Full-time MDs + DDs in general hospitals
TOTDO74	340-343	1974	Doctors of osteopathy
IRGEN75	4365-4369	1975	Full-time interns and residents, general hospitals (MD)
IRNGH75	4380-4384	1975	Same, non-general hospitals
INTPRO72	4395-4396	1971-2	Number of internship programs
RESPRO72	4402-4403	1971-2	Number of residency programs
			MEDICAL SCHOOLS AND ENROLLMENT
1STYRM75	4249-4251	1975	1st year male
1STYRF75	4252-4254	1975	1st year female
INTERM75	4255-4258	1975	Intermediate male
INTERF75	4259-4261	1975	Intermediate female
GRADM75	4262-4264	1975	Graduate male
GRADF75	4265-4267	1975	Graduate female
TOTMDENR	4268-4271	1975	Total enrollment in medical schools
			HEALTH FACILITIES AND EXPENDITURES
GENHOSP	702-704	1975	Number of general hospitals
SPECHOSP	708-710	1975	Number of special hospitals
OSTHOSP	722-724	1974	Number of short-term general osteopathic hospitals
GENBEDS	728-734	1975	Number of general hospital beds
SPECBEDS	742-748	1975	Number of special hospital beds
OSTBEDS	774-780	1974	Number of short-term osteopathic beds
ECBEDS73	1104-1108	1973	Number of EC hospital beds
REPEXP	1168-1170	1975	Hospitals reporting expenses (general + non-general)
HOSPEXP	1174-1179	1975	Total reported expenditures (general + non-general) in thousands of dollars
			GENERAL HOSPITALS WITH LISTED FACILITIES
			DIAGNOSTIC:
HISTOLAB	872-874	1975	Histopath lab
EEG	890-892	1975	EEG

TABLE 8-1 (CONT'D.) LIST OF VARIABLES

			LONG-TERM CARE
EXTCARE	992-994	1975	Extended care
PSYCHFH	950-952	1975	Psychiatric foster home
HOMECARE	1010-1012	1975	Home care
			PSYCHIATRIC
PSYCHIN	956-958	1975	Psychiatry - inpatient
PSYCHOUT	962-964	1975	Psychiatry - outpatient
PSYCHPRT	968-970	1975	Psychiatry - partial hospital
PSYCHEMR	974-976	1975	Psychiatry - emergency
			UTILIZATION
OPVISGEN	4090-4097	1975	Outpatient visits - general hospitals
OPVISSPE	4202-4209	1975	Outpatient visits - special hospitals
OPVISOST	4162-4169	1974	Osteopathic outpatient visits
ERVISGEN	4170-4177	1975	Clinic outpatient visits (Emergency) general hospital
DAYSGEN	3991-3997	1975	General hospital inpatient days
DAYSOST	4054-4060	1974	Osteopathic hospital inpatient days

AMA PHYSICIAN DISTRIBUTION 1975 FILE

Field			
			HEALTH MANPOWER
MD75	4	1975	Active non-federal MDs, total office and hospital-based: general practice
PCGP	5	1975	Non-federal physician, not hospital-based: general practice
PCMED	6	1975	Same - medical specialties
PCSURG	7	1975	Same - surgical specialties
PCOTH	8	1975	Same - other specialties (office based)
PCHOSP	9	1975	Non-federal physicians, hospital-based practice

TABLE 8-1 (CONT'D.) LIST OF VARIABLES

SMI FILE

Field						
			SMI EXPENDITURES AND ENROLLEES			
SMI75NUM	1	1975	SMI 1975 enrollees			
SMI75AMT	2	1975	SMI 1975 amount			

PART B WORKLOAD FILE 1 1976

Total	Assigned	Unassigned	Card	Col	FSY	
CPROS	CPROSA	CPROSU	1	80-87	1976	Claims processed
CPAID	CPAIDA	CPAIDU	1	56-63	1976	Claims processed and paid
CPDED	CPDEDA	CPDEDU	1	64-71	1976	Claims processed and applied toward deductible
DENIED	DENIEDA	DENIEDU	1	72-79	1976	Claims processed and denied
CHARGE	CHARGEA	CHARGEU	2	40-50	1976	Covered charges for all claims in dollars
NCHRED	NCHREDA	NCHREDU	2	51-58	1976	Number of claims where billed charge was reduced
AMTRED	AMTREDA	AMTREDU	2	59-69	1976	Amount of reduction in dollars
INVEST	INVESTA	INVESTU	2	32-39	1976	Claims investigated
CPND	CPNDA	CPNDU	2	8-15	1976	Total claims pending end of month

PART B PROCESSING TIME FILE 2 1976

Total	Assigned	Unassigned	Card	Col	FSY	
MPT	MPTA	MPTU	1 AND 2	17-20	1976	Mean processing time (monthly)
TPRO	TPROA	TPROU	1 AND 2	7-16	1976	Claims processed (monthly)

TABLE 8-1 (CONT'D.) LIST OF VARIABLES

DISCRETIONARY PRACTICES (IM 75-53)

DISPRA1	AIIa: Data excluded from data base history - Teaching setting claims
DISPRA2	- Provider based physician claims
DISPRA3	- Token and/or extreme charges *
DISPRA4	- Token and/or extreme charges
DISPRA5	- Charges to Medicare ineligibles
DISPRA6	AIIb2: Percent of total data base excluded
DISPRA7	AIIIa: Other data included with Medicare data *
DISPRA8	AIIIa: Other data included with Medicare data
DISPRA9	AIIIb: Other data merged or compared with Medicare data & AIIIc: Percent of data base non-Medicare
DISPRA10	AIIIb: Other data merged or compared with Medicare data & AIIIc: Percent of data base non-Medicare *
DISPRA11	BI: Parameters selected to arrive at a customary charge
DISPRA12	BI: Parameters selected to arrive at a customary charge *
DISPRA13	BIX: Requirement of 3 months base year experience before developing a customary charge profile
DISPRA14	CII: Provider specialty grouping for computing area prevailing charges
DISPRA15	CIII: Minimum number of customary charge records and/or services to compute a prevailing charge
DISPRA16	DIa1: Pricing sequence in absence of a customary charge
DISPRA17	DIa2: Pricing sequence in absence of a prevailing
DISPRA18	DVII: Compare Medicare customary and/or prevailing charge screens to any other screens
DISPRA19	DVIII: Pricing claims submitted by new man in town
DISPRA20	DIX: Reimbursement of an established physician with no customary

* Alternative scoring of responses

TABLE 8-1 (CONT'D.) LIST OF VARIABLES

GENERATED VARIABLES, BY SOURCE AND SUBJECT

A.R.F.6 MAY 1977 FILE

POPULATION

AGED	= (MAGED70+FAGED70)	Total aged
PCTAGED	= (AGED*100) / CENSUS70	Aged as percent of population 1970
PCTURB	= (URBPO70*100) / CENSUS70	Percentage of 1970 population in urban areas
PCTAFDC	= AFDC75 / CENSUS70	Percentage of 1970 population on AFDC
UNDER25	= M04 + F04 + M514 + F514 + M1524 + F1524	Population under 25
25PLUS	= CENSUS70 - UNDER25	Population 25 and over
NRLOCC	= number of localities for each carrier ID	Number of localities by carrier (from file CONV77)
POPLOC	= (CENSUS70*100) / NRLOCC	Population per locality
MORTAGED	= (MORT6574+MORT7584+MORT85) / AGED	Mortality of aged

A.R.F.6 MAY 1977 FILE & AMA FILE

HEALTH MANPOWER

PCTMDGN	= (MDGEN75/MD75) * 100	Full-time MDs and DOs in general and non-general hospitals per active non-federal MD75
MDDO	= MD75 / TOTDO74	Active non-federal MD75 per doctor of osteopathy in patient care
MDIRGH	= MD75 / IRGEN75	Active non-federal MD75 per full-time intern and resident, in general hospitals
INTRES	= IRGEN75 + IRNGH75	Total full-time interns and residents in general and non-general hospitals
MDIR	= MD75 / INTRES	Active non-federal MD75 per full-time intern and resident in general and non-general hospitals
INREPRO	= INTPRO72 + RESPRO72	Total number of internship and residency programs
HOSPPRO	= GENHOSP / INREPRO	General and non-general hospitals per internship and residency program

TABLE 8-1 (CONT'D.) LIST OF VARIABLES

	MEDICAL SCHOOLS AND ENROLLMENT	
MDENR	= MD75 / TOTMDENR	Active non-federal MD75 per total enrollment in medical school
	HEALTH FACILITIES AND EXPENDITURES	
GENSPH	= GENHOSP + SPECHOSP	Total number of general and special hospitals
HOSPITAL	= GENHOSP + SPECHOSP + OSTHOSP	Total hospitals (general, non-general and osteopathic)
TOTBEDS	= GENBEDS + SPECBEDS + OSTBEDS	Total hospital beds (general, non-general and osteopathic)
ABDAYPOP	= (TOTBEDS*365) / (CENSUS70*100)	Number of available bed days per person 1970
BEDEC	= TOTBEDS / ECBEDS73	Total hospital beds / ECBED
PCREPEX	= (REPEXP*100) / HOSPITAL	Percentage of hospitals reporting expenses
EXPBED	= HOSPEXP / (PCREPEX*TOTBEDS)	Estimated expense per bed in thousands of dollars
DIAG	= HISTOLAB + EEG	Hospitals with diagnostic services
LONGTC	= EXTCARE + PSYCHFH + HOMECARE	Long term care
PSYCH	= PSYCHIN + PSYCHOUT + PSYCHPRT + PSYCHEMR	Psychiatric services
DIAGGH	= GENHOSP / DIAG	Total general hospitals per hospital with diagnostic services
LONG	= GENHOSP / LONGTC	Same for long term care
PSYSERV	= GENHOSP / PSYCH	Same for psychiatric services
	UTILIZATION	
TAMBVS	= OPVISGEN + OPVISSPE + OPVISOST + ERVISGEN	Total ambulatory visits
AMBVSBED	= TAMBVS / TOTBEDS	Total ambulatory visits per bed
IPDAYS	= DAYSGEN + DAYSOST	Total inpatient days (general hospital and osteopathic)
IPDPOP	= IPDAYS / (CENSUS70*100)	Inpatient days (general hospital and osteopathic) / population 1970
	HEALTH MANPOWER (AMA FILE)	
POPMD	= (CENSUS70*100) / MD75	Population 1970 per non-federal MD75 (total office and hospital-based practice)
BEDSMD	= TOTBEDS / MD75	Total beds per non-federal MD75 (total office and hospital based practice)

TABLE 8-1 (CONT'D.) LIST OF VARIABLES

POPULATION PER MD NON-HOSPITAL BASED PRACTICE BY SPECIALTIES

POPGP	= (CENSUS70*100) / PCGP	Population 1970 per MD (general practice)
POPMED	= (CENSUS70*100) / PCMED	Population 1970 per MD (medical specialties)
POPSUR	= (CENSUS70*100) / PCSURG	Population 1970 per MD (surgical specialties)
POPOMD	= (CENSUS70*100) / PCOTH	Population 1970 per MD (other office-based specialties)

POPULATION PER MD HOSPITAL-BASED PRACTICE

POPHMD	= (CENSUS70*100) / PCHOSP	Population 1970 per MD (hospital-based practice)

SMI FILE - SMI EXPENDITURES AND ENROLLEES

SMI75EN	= SMI75AMT / SMI75NUM	SMI 1975 per enrollee

PART B WORKLOAD FILE 1 1976

ASP	= (CPROSA/CPROS) * 100	Assignment rate: assigned claims as percent of total claims processed
REDBIL	= NCHRED / (CPAID + CDED)	Percent of claims reduced - all claims
REDBILA	= NCHREDA / (CPAIDA + CDEDA)	- assigned claims
REDBILU	= NCHREDU / (CPAIDU + CDEDU)	- unassigned claims
RED	= (AMTRED/CHARGE) * 100	Percent of dollar reduction - all claims
REDA	= (AMTREDA/CHARGEA) * 100	- assigned claims
REDU	= (AMTREDU/CHARGEU) * 100	- unassigned claims
PCDENPR	= (DENIED/CPROS) * 100	Denial rate: claims denied as percent of total claims processed
PCDENPRA	= (DENIEDA/CPROSA) * 100	Denial rate: assigned claims
PCDENPRU	= (DENIEDU/CPROSU) * 100	Denial rate: unassigned claims
PCINV	= (INVEST/CPROS) * 100	Investigation rate: claims investigated as percent of total claims processed
PCINVA	= (INVESTA/CPROSA) * 100	Investigation rate: assigned claims
PCINVU	= (INVESTU/CPROSU) * 100	Investigation rate: unassigned claims
ANCPND	= CPND1 + CPND2 + ... + CPND12	Total annual claims pending at the end of the month (summation of monthly data July 1975 through June 1976 at carrier level)

TABLE 8-1 (CONT'D.) LIST OF VARIABLES

ANCPNDA	= CPNDA1 + ... + CPNDA12	Same - assigned claims
ANCPNDU	= CPNDU1 + ... + CPNDU12	Same - unassigned claims
ANCPRO	= TPRO1 + ... + TPRO12	Total annual claims processed during the FSY 1976 (summation of monthly data at carrier level)
ANCPROA	= TPROA1 + ... + TPROA12	Same - assigned claims
ANCPROU	= TPROU1 + ... + TPROU12	Same - unassigned claims
AVSTPD	= ANCPND / ANCPRO	Ratio of claims pending to claims processed
AVSTPDA	= ANCPNDA / ANCPROA	Same - assigned claims
AVSTPDU	= ANCPNDU / ANCPROU	Same - unassigned claims

PART B PROCESSING TIME FILE 2 1976

AMPT	= (MPT1*TPRO1 + ... + MPT12*TPRO12) / ANCPRO	Annual mean processing time - all claims
AMPTA	= (MPTA1*TPROA1 + .. + MPTA12*TPROA12)/ANCPROA	Same - assigned claims
AMPTU	= (MPTU1*TPROU1 + .. + MPTU12*TPROU12)/ANCPROU	Same - unassigned claims
AMPTAU	= AMPTA / AMPTU	Ratio of mean processing time of assigned claims to unassigned claims

DISCRETIONARY PRACTICES FILE

DISPRACS	= DISPRA1 + DISPRA2 + DISPRA5 + DISPRA6 + DISPRA8 + DISPRA9 + DISPRA11 + DISPRA13 + DISPRA13 + DISPRA14 + DISPRA15	Combined score of selected discretionary practices

TABLE 8-2

Variables Used in Regression Analysis

FAMINC69
MORTAGED
PCTURB
PCTMDGN
MDIRGH
MDIR
HOSPPRO
ABDAYPOP
BEDEC
EXPBED
DIAGGH
LONG
PSYSERV
IPDPOP
POPMD
BEDSMD
POPMED
POPSUR
POPOMD
SMI75EN
ASP
REDBIL
REDBILA
REDBILU
RED
PCDENPR
PCDENPRA
PCINV
AMPTA
AVSTPDA
AVSTPDU
AMPT
AMPTU

DISPRA16
DISPRA17
DISPRA18
DISPRA19
DISPRA20

DISPRACS = DISPRA1
+ DISPRA2
+ DISPRA4
+ DISPRA5
+ DISPRA6
+ DISPRA8
+ DISPRA9
+ DISPRA11
+ DISPRA13
+ DISPRA15
+ DISPRA14

TABLE 8-3

ROTATION METHOD: VARIMAX

ROTATED FACTOR PATTERN

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6	FACTOR7	FACTOR8	FACTOR9
DENSITY	-0.25309	0.21408	-0.14462	-0.08036	-0.03717	0.02638	0.21436	-0.16884	-0.03163
FAMINC69	-0.72438	0.05744	-0.02466	0.00209	-0.02461	0.18351	0.21002	0.20132	-0.08424
SCHOOL70	-0.56264	0.10150	0.23507	-0.04130	-0.05364	0.01555	0.09851	0.14220	0.04357
PCTAGED	0.21589	0.21101	-0.06359	0.04332	-0.10686	-0.40984	-0.11494	0.06027	-0.05209
PCTURB	-0.60344	0.10903	-0.19270	-0.07861	-0.02168	-0.05807	0.17859	0.04795	-0.10705
PCTAFDC	-0.24923	-0.10945	-0.35334	-0.06214	-0.01445	-0.08460	0.13078	-0.04154	0.04095
POPLDC	-0.24094	0.04522	-0.18903	0.03792	-0.00766	-0.20534	0.32755	0.03899	-0.03810
PCTMDGN	-0.12971	-0.09016	-0.11213	-0.25769	-0.08630	0.05195	0.14577	-0.14307	-0.06879
MDDD	0.24609	-0.10565	-0.09934	-0.15921	0.03678	0.15901	0.02025	-0.29120	0.10756
MDIRGH	0.16701	-0.05167	0.94024	0.10214	0.05233	0.04673	0.02621	-0.00527	0.02233
MDIR	0.17000	-0.05059	0.93683	0.10683	0.05029	0.04737	0.02763	-0.00545	0.02216
MDSPRD	0.35546	-0.06999	0.83354	-0.03158	0.04519	-0.02604	-0.00432	-0.11140	0.04001
MDENR	0.09695	0.40768	0.15958	-0.06627	-0.20821	0.22695	-0.01394	-0.10602	-0.17235
AGDAYPOP	0.22432	-0.15578	0.01753	0.00606	-0.00709	-0.89718	-0.06371	0.04699	0.04863
ELDEC	0.00057	0.31413	-0.09827	-0.06744	-0.19608	0.31529	0.27608	-0.04462	-0.22520
EXPBED	-0.66976	0.13940	-0.17651	-0.17234	-0.03779	0.27554	-0.20625	0.03003	-0.12566
DIAGGH	0.73567	-0.12246	0.18293	-0.10778	-0.04159	-0.11552	-0.15605	-0.18289	0.02616
LONG	0.16629	0.05871	-0.06100	-0.12796	-0.25856	-0.11936	0.08061	0.06320	0.12436
FSYSERV	0.70106	0.00605	0.29062	-0.11147	-0.11157	-0.16242	0.02642	-0.10776	0.08922
AMBVSHED	-0.44507	-0.00079	-0.09116	-0.19487	-0.08062	0.49316	-0.01832	-0.07586	-0.01462
IPDPOP	0.17969	-0.11231	-0.12050	0.00599	0.06074	-0.87659	-0.08236	0.08236	0.03934
PDPMD	0.92276	-0.07343	0.21839	-0.00684	-0.04789	-0.01652	-0.04564	0.08626	0.07475
PEDSMD	0.83901	-0.12754	0.15065	0.02212	-0.03531	-0.41033	-0.08624	0.08414	0.06825
PDPGP	-0.21447	0.17767	-0.40888	0.04636	0.13074	0.05582	-0.05771	0.20102	-0.00349
PDPMED	0.68871	-0.11590	0.26138	-0.01424	-0.07354	-0.07505	0.01085	0.11255	0.08213
PDPSUR	0.88192	0.03958	0.02680	0.03070	-0.09634	-0.00746	0.05567	0.24361	-0.00196
PDPDMD	0.94512	0.04126	0.09478	-0.03841	0.00450	-0.01458	-0.00618	0.04369	-0.01694
PDPNMD	0.36674	-0.09679	0.80620	-0.02278	-0.05901	0.02010	0.04967	-0.09178	0.05482
SM175EN	-0.71191	0.14526	0.01212	-0.26963	-0.19997	-0.14083	-0.01409	-0.24812	-0.08839
ASP	-0.02963	0.03238	-0.30971	0.03438	-0.12738	0.00352	-0.29890	0.01850	-0.10855
REDBIL	0.06054	0.15911	0.08684	0.90561	-0.00344	-0.03484	0.05151	-0.04694	-0.01169
REDBILA	0.04110	0.21923	0.00875	0.78226	-0.03423	-0.01294	0.01930	-0.12164	-0.00557
REDBILU	0.06528	0.18539	0.07989	0.88133	0.01456	-0.05914	0.03002	0.06015	-0.04564
RED	-0.22560	0.11019	0.02946	0.29473	-0.09837	0.07355	-0.03282	-0.05208	-0.10420
REDA	-0.23208	0.12773	-0.02773	0.27954	-0.11796	0.07229	-0.06486	-0.07657	-0.15715
REDU	-0.20213	0.13556	0.04180	0.30562	-0.05572	0.02280	0.00349	-0.05368	-0.02783
RCDENPR	-0.10450	0.06014	0.05202	0.08740	0.05423	0.07284	0.93239	0.08815	-0.05960
RCDENPRA	-0.04278	0.03726	0.07391	-0.02801	-0.00296	0.11153	0.87431	0.11282	-0.10531
RCDENPRU	-0.11751	0.12626	-0.05232	0.17248	0.05045	0.05859	0.48494	-0.03520	0.00240
PCINV	0.12300	-0.05425	0.01918	-0.01057	0.08553	-0.04109	-0.01506	0.07513	0.96283
PCINVA	0.20127	-0.00771	0.17735	-0.02979	0.04651	-0.06267	-0.09718	-0.11311	0.69393
PCINVU	0.07004	-0.09834	-0.12332	-0.02145	0.00286	-0.00057	-0.13030	0.13455	0.64930
AMPTA	-0.06542	0.94253	-0.04608	0.05228	-0.02378	0.11024	0.02255	-0.15360	-0.05557
AVSTPU	-0.11288	0.95268	-0.01247	0.11836	0.11329	-0.04298	0.06510	0.01223	-0.00435
AVSTRDA	-0.10872	0.88295	-0.00613	0.04260	0.01284	-0.03236	0.07861	-0.14523	-0.02904
AVSTRDU	-0.05532	0.90581	-0.05408	0.16443	0.14124	-0.02542	0.03968	0.11165	0.01148
AMPT	-0.06710	0.96404	-0.06639	0.09499	0.00546	0.09317	0.01035	-0.04467	-0.03069

TABLE 8-3 (CONT'D.)

ROTATION METHOD: VARIMAX

ROTATED FACTOR PATTERN

	FACTOR10	FACTOR11	FACTOR12	FACTOR13	FACTOR14	FACTOR15	FACTOR16	FACTOR17	FACTOR18
DENSITY	0.06703	0.48243	0.00173	0.02330	0.30423	0.02563	0.27216	-0.00326	-0.22179
FAMINC69	0.14864	0.08287	0.12298	-0.01139	0.34203	0.24372	0.07416	-0.13635	0.00050
SCHOOL70	0.13936	-0.08804	0.17644	0.05269	0.22993	0.02220	-0.02287	-0.49908	0.17137
PCTAGED	-0.16130	0.13682	-0.05286	-0.01353	0.16030	-0.62748	-0.15674	-0.09441	-0.02131
PCTURB	0.00889	0.25309	0.07282	0.04144	-0.04306	-0.10523	0.13204	-0.08009	-0.13888
PCTAFDC	0.09530	0.17477	-0.14714	-0.14121	-0.05223	0.12222	0.04309	0.47970	0.04472
POPDEC	0.03613	0.29121	-0.27276	0.20003	0.22019	-0.07022	-0.01420	0.24901	0.01314
PCTMDGN	0.10618	0.17292	-0.02650	0.08078	0.14064	0.60446	-0.02783	-0.03208	-0.04873
MDGD	0.18200	-0.01757	0.10139	0.00249	-0.09418	-0.10045	0.14451	0.53983	0.06216
MDIRGH	-0.00135	0.00601	-0.05378	0.00627	0.03061	-0.07694	0.02880	-0.08323	-0.03114
MDIR	-0.00063	0.00779	-0.05454	0.00824	0.03185	-0.07862	0.02779	-0.08296	-0.02927
HOSPPRD	0.06442	-0.08748	0.04253	0.11832	-0.02937	0.01257	0.03951	-0.13758	0.04691
MDENR	-0.00421	0.10514	-0.02303	0.09610	0.34125	-0.08535	0.23170	-0.16894	-0.16429
ARDAYPOP	-0.04472	-0.11969	0.01840	0.06139	-0.15830	-0.12636	-0.01654	-0.11281	-0.03602
ELDEC	-0.23946	0.14344	0.05036	0.08672	0.23542	0.01606	0.29323	-0.01482	-0.19431
LAPOED	-0.00964	0.20543	0.10754	0.00807	0.17590	0.22297	-0.06622	0.08908	-0.04936
DIAGGH	0.13952	-0.19127	-0.06224	0.18773	-0.18709	0.01244	0.02335	-0.23965	0.13720
LUNG	-0.02060	0.02721	-0.04592	0.02461	-0.85202	-0.06030	0.03557	-0.00052	-0.09702
PSYSERV	0.21096	-0.09991	0.08255	0.10534	-0.39511	-0.16357	0.01116	-0.02245	0.06629
AMBVSDED	0.04794	0.01281	-0.09473	0.01724	0.12896	0.60857	-0.10114	0.04840	0.09544
IPOPDP	-0.14547	-0.03077	-0.02365	0.02324	-0.01487	-0.15296	-0.06406	0.04157	-0.04048
POPML	0.03151	-0.09721	0.04501	-0.01213	-0.05180	0.10056	0.05089	-0.03276	-0.04412
BEDSMD	0.02335	-0.12017	0.05199	0.06926	-0.07888	-0.01770	0.05020	-0.09708	-0.03040
POPDP	-0.06054	0.18015	-0.10086	0.05777	0.05276	0.14589	0.04208	0.46970	0.02769
POPMED	0.01662	-0.04098	0.09201	-0.02171	0.00123	-0.00842	0.05016	-0.07095	-0.02964
POPSUR	0.02189	0.03383	0.09168	-0.03330	0.22769	-0.11317	0.12175	-0.03851	-0.07426
POPDMD	0.00841	0.00008	0.02335	-0.02721	0.10048	-0.01826	0.01347	0.12361	-0.03963
POPHMD	0.05963	-0.05149	0.06489	0.11591	0.02749	0.29346	0.02298	-0.21250	-0.02825
SM175EN	0.08179	0.25533	0.10224	-0.04236	-0.01540	0.07160	0.08208	-0.14469	-0.02815
ASP	0.02190	0.13968	-0.07220	-0.03334	0.07952	0.14690	-0.11076	0.67069	0.17824
REDBIL	0.05345	0.22984	0.07204	0.14812	0.03470	-0.14428	0.01246	-0.07435	-0.00699
REDBILA	0.06834	0.21002	0.07824	0.17518	0.07929	-0.10931	-0.00970	0.01546	-0.03867
REDBILU	0.02394	0.24007	0.09401	0.08385	0.02487	-0.11546	0.02872	0.01533	0.08501
RED	-0.07259	0.18042	0.01213	0.03754	-0.02726	-8.89E-05	-0.04586	0.04448	0.11205
REDA	-0.09938	0.18468	-0.00091	0.08584	0.03209	0.01051	0.02515	0.09543	0.02404
REDU	0.05025	0.18269	0.03996	-0.00441	-0.04002	-0.00310	-0.10145	0.06005	0.23173
PCDENPR	0.10186	-0.04039	0.02229	-0.07094	-0.05565	0.15296	-0.17652	-0.04657	-0.13905
PCDENPRA	0.14057	0.02559	-0.06928	-0.01307	-0.00991	0.01092	0.03679	-0.16037	-0.10555
PCDENPRU	0.06069	-0.11910	0.18534	-0.08941	-0.01375	0.25482	-0.51797	0.30369	-0.18482
PCINV	-0.10952	-0.12464	0.00706	-0.04839	-0.08622	-0.00262	-0.02559	0.01756	-0.12155
PCINVA	0.09886	-0.05493	0.10874	0.10188	-0.05343	-0.00992	0.06238	-0.17432	-0.05418
PCINVU	-0.09119	-0.07252	-0.01305	-0.09882	-0.02344	0.03479	-0.11023	0.45331	-0.07067
AMTA	-0.09703	0.04492	0.05028	0.01023	0.01821	-0.06412	0.04039	-0.00062	-0.03538
AVSTED	-0.05387	0.13255	-0.12119	-0.05976	-0.01310	-0.00810	0.03905	-0.11182	0.02563
AVSTEDA	-0.05248	0.16531	-0.09638	-0.06764	0.00283	-0.02621	0.09591	-0.14167	0.04929
AVSTEDU	-0.06998	0.10500	-0.15553	-0.04378	-0.02526	0.00276	-0.03537	0.01029	0.00433
AMPT	-0.00695	-0.00029	0.03443	-0.02362	-0.00331	-0.05354	-0.01310	0.04213	-0.03484

TABLE 8-3 (CONT'D.)

ROTATION METHOD: VARIMAX

ROTATED FACTOR PATTERN

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6	FACTOR7	FACTOR8	FACTOR9
AMPTAU	-0.15705	-0.05262	0.19272	-0.17171	0.01800	0.06824	0.02719	-0.50257	-0.14948
AMPTU	-0.06324	0.95201	-0.09083	0.12036	0.01776	0.08719	-0.02649	0.03538	-0.01606
DISPRA1	0.21592	-0.01075	0.07499	-0.09084	-0.08689	0.02073	-0.13458	-0.14644	-0.15485
DISPRA2	0.01986	0.01068	-0.08797	0.04628	0.02213	0.02863	-0.11441	0.05184	-0.23570
DISPRA3	-0.10165	-0.08452	-0.03418	-0.14560	0.01389	0.14240	-0.16772	0.17061	-0.03166
DISPRA4	0.01061	-0.15259	0.15232	0.21192	-0.04092	0.14059	-0.20317	0.17492	0.18115
DISPRA5	0.06415	0.16550	-0.09242	0.15534	-0.04392	0.09106	0.05026	-0.18516	0.06751
DISPRA6	-0.01090	0.11122	-0.12194	-0.17675	-0.06271	0.03481	-0.05151	0.01074	0.00392
DISPRA7	-0.07632	0.07626	0.02880	0.07723	0.95824	-0.06297	0.00747	-0.04663	0.05157
DISPRA8	-0.12549	0.06243	0.01714	0.06064	0.87674	-0.11350	0.01702	-0.02863	0.01139
DISPRA9	0.10523	0.00093	-0.00977	-0.10430	0.80338	0.12981	0.00153	0.07313	0.02896
DISPRA10	-0.01211	0.07789	0.02837	-0.05075	0.97406	-0.00596	0.03333	-0.09196	0.05055
DISPRA11	0.03632	-0.10913	0.01401	0.06061	-0.01213	0.07033	0.08600	-0.07759	-0.02442
DISPRA12	0.07742	-0.14342	0.06544	0.06669	0.08701	0.14204	0.14474	-0.04296	-0.04987
DISPRA13	-0.07601	0.17542	-0.08992	0.13422	0.05057	0.06559	0.21217	0.17346	-0.21488
DISPRA14	-0.05040	-0.10556	-0.04197	-0.19565	0.01298	0.31582	0.09724	0.31984	0.05175
DISPRA15	0.11240	0.02936	0.06988	0.04446	0.02178	0.05014	-0.13242	0.09911	0.02757
DISPRA16	0.08247	-0.05954	-0.07455	-0.15156	-0.05707	-0.02865	0.05962	0.77682	0.09987
DISPRA17	-0.02459	0.20935	0.01609	-0.18456	-0.05414	0.01019	0.02360	-0.14973	-0.04668
DISPRA18	-0.10174	-0.22244	0.10596	-0.18398	0.37159	0.36578	-0.00473	-0.21494	-0.15389
DISPRA19	-0.05766	0.13388	-0.09291	-0.10760	0.03071	0.09448	0.21792	0.00247	-0.00451
DISPRA20	0.12936	-0.09184	-0.05605	0.02791	-0.06752	-0.12433	0.13626	0.81314	-0.09789
MORTAGED	0.20713	-0.10136	0.10992	-0.10783	-0.15605	0.13266	0.04419	0.09706	0.09338

ROTATION METHOD: VARIMAX

ROTATED FACTOR PATTERN

	FACTOR10	FACTOR11	FACTOR12	FACTOR13	FACTOR14	FACTOR15	FACTOR16	FACTOR17	FACTOR18
AMPTAU	-0.17464	0.05943	0.11318	0.13188	-0.01928	-0.02521	0.31203	-0.43939	0.11350
AMPTU	-0.00892	-0.02139	-0.00705	-0.02965	0.00091	-0.03338	-0.08352	0.14539	-0.02285
DISPRA1	-0.21153	-0.26951	-0.36007	0.16780	-0.25622	0.17774	-0.03189	0.12123	0.25893
DISPRA2	-0.14029	0.01490	-0.01012	-0.09692	-0.03730	0.03011	-0.00370	-0.12263	0.50647
DISPRA3	0.12760	0.24758	0.16930	0.09521	0.09344	-0.03262	0.08032	0.32877	0.72779
DISPRA4	0.04753	0.30416	0.40224	0.24615	-0.06287	-0.12911	0.02266	0.07738	0.44795
DISPRA5	-0.17249	0.21718	-0.06691	0.34343	-0.16624	-0.22189	-0.21822	0.12931	-0.03098
DISPRA6	-0.10997	0.01603	0.03800	-0.70997	0.00715	-0.06627	0.07091	-0.01682	0.07111
DISPRA7	0.00106	-0.01564	-0.02080	0.04531	0.05517	-0.08639	0.02548	0.02320	-0.04544
DISPRA8	-0.04326	0.00465	-0.08853	0.10556	0.13936	-0.12357	0.02971	0.08867	-0.06405
DISPRA9	0.04429	-0.10693	0.18053	-0.08738	0.01090	0.06200	-0.04008	-0.12190	0.06412
DISPRA10	0.06945	-0.09874	0.00021	-0.00996	-0.00761	0.02636	0.01169	-0.00519	0.05648
DISPRA11	0.90210	0.00048	0.10159	-0.00120	-0.06429	0.08667	0.02702	0.13776	-0.00263
DISPRA12	0.77709	-0.00740	-0.14579	0.02513	0.08531	0.01913	0.02481	-0.05309	-0.07570
DISPRA13	-0.02942	0.02460	0.01863	0.34067	-0.00151	0.11106	0.38124	0.01769	-0.13184
DISPRA14	0.13690	-0.15803	0.26046	-0.02552	-0.17648	-0.00027	0.09666	-0.10198	-0.49272
DISPRA15	0.07952	-0.07766	0.07373	-0.11049	-0.01713	-0.01214	0.77742	0.03947	0.01037
DISPRA16	-0.05975	-0.04854	0.06482	-0.01920	-0.08800	-0.05178	0.10648	-0.01569	0.11113
DISPRA17	0.05937	-0.00583	-0.75795	-0.06693	-0.03843	-0.03713	-0.04643	0.08529	-0.05462
DISPRA18	0.19791	-0.04049	0.10138	-0.18511	-0.15524	0.11385	-0.22807	-0.26765	-0.02003
DISPRA19	0.09496	-0.10958	-0.14398	-0.69587	-0.02267	0.03641	-0.05682	0.19361	-0.13429
DISPRA20	-0.10264	-0.10901	0.16956	0.03561	0.03870	-0.07715	0.09493	-0.03584	0.03147
MORTAGED	-0.17717	-0.17657	0.04655	-0.10531	-0.05970	0.52299	-0.12688	0.30058	-0.00188

TABLE 8-4

Regression Equations for $X_j = X_i / \bar{X}$ [a/]

[b/] DEP VARIABLE=GP77150

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	6	0.746319	0.124386	21.958	0.0001
ERROR	46	0.260576	0.005665		
CORRECTED TOT	52	1.006895	0.019363	RSQUARE =	0.7412

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.46845875	0.11940386	3.92331	0.0003	
PCTURB	1	0.31652477	0.06713061	4.71506	0.0001	
PCTMDGN	1	0.10183864	0.01473792	6.90997	0.0001	
POPMED	1	0.22634935	0.05799040	3.93771	0.0003	
POPGRD	1	-0.18717217	0.06775474	-2.76250	0.0082	
DISTRA16	1	-0.07332389	0.03030456	-2.41957	0.0195	
DISTRA18	1	0.10288464	0.02884467	3.56685	0.0009	

[c/] REGRESSIONS FOR TYPE=0 CARRIERS ONLY
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=GP77150

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	2	0.194915	0.097457	20.861	0.0001
ERROR	22	0.102781	0.004672		
CORRECTED TOT	24	0.297696	0.012404	RSQUARE =	0.6547

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	-0.01230701	0.21958816	-0.05605	0.9558	
PCTURB	1	0.33317575	0.05677701	5.86815	0.0001	
REGION	1	0.62273835	0.21029017	2.96133	0.0072	

[d/] REGRESSIONS FOR CARRIERS WITH TYPE ¬= 0
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=GP77150

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	4	0.551901	0.137975	21.686	0.0001
ERROR	23	0.146336	0.006362		
CORRECTED TOT	27	0.698236	0.025861	RSQUARE =	0.7904

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.67395013	0.06973729	7.51026	0.0001	
PCTURB	1	0.25906303	0.08623292	3.00422	0.0063	
PCTMDGN	1	0.12858800	0.01886868	6.81489	0.0001	
AVSIPUA	1	0.16571742	0.07822334	2.11852	0.0451	
AVSIPUU	1	-0.24769015	0.07964453	-3.10995	0.0049	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_i / \bar{X}$ a/

DEP VARIABLE=GP77W50 b/

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	6	0.849995	0.141666	22.565	0.0001
ERROR	46	0.288788	0.006278		
CORRECTED TOT	52	1.138783	0.021900		RSQUARE = 0.7464

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.45686795	0.12570164	3.63454	0.0007	
PCTURB	1	0.34141596	0.07067131	4.83104	0.0001	
PCTMDGN	1	0.10804527	0.01551525	6.96381	0.0001	
POPMED	1	0.24995255	0.06104902	4.09429	0.0002	
POPOMD	1	-0.20442677	0.07132836	-2.86600	0.0062	
DISTRA16	1	-0.07271741	0.03190293	-2.27933	0.0273	
DISTRA18	1	0.11394298	0.03036604	3.75232	0.0005	

REGRESSIONS FOR TYPE=0 CARRIERS ONLY c/

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=GP77W50

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	2	0.206128	0.103064	18.819	0.0001
ERROR	22	0.120467	0.005477		
CORRECTED TOT	24	0.326615	0.013609		RSQUARE = 0.6311

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	-0.00021574	0.23775150	-0.00091	0.9993	
PCTURB	1	0.34317950	0.06147335	5.58257	0.0001	
REGBIL	1	0.63601629	0.22768443	2.79341	0.0106	

REGRESSIONS FOR CARRIERS WITH TYPE ~= 0 d/

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=GP77W50

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	4	0.639877	0.159969	22.941	0.0001
ERROR	23	0.160379	0.006973		
CORRECTED TOT	27	0.800255	0.029639		RSQUARE = 0.7996

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	-0.33212259	0.36271230	-0.91566	0.3693	
MORTAGED	1	0.65276352	0.31471968	2.07411	0.0494	
PCTURB	1	0.39112048	0.08553934	4.57240	0.0001	
PCTMDGN	1	0.10191995	0.02345493	4.34535	0.0002	
DISTRA18	1	0.19877604	0.06375374	3.11787	0.0049	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_i / \bar{X}$ [a/]

DEP VARIABLE=GP771PR [b/]

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	3	0.612053	0.204018	32.093	0.0001
ERROR	49	0.311494	0.006357		
CORRECTED TOT	52	0.923547	0.017761	RSQUARE =	0.6627

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.53703125	0.05505959	9.75364	0.0001	
PCTURB	1	0.24635713	0.04660722	5.28581	0.0001	
PCTMOGN	1	0.09381977	0.01528945	6.13624	0.0001	
DISPRA18	1	0.08736211	0.02953710	2.95771	0.0048	

REGRESSIONS FOR TYPE=0 CARRIERS ONLY [c/]

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=GP771PR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	3	0.203274	0.067758	18.119	0.0001
ERROR	21	0.078332	0.003740		
CORRECTED TOT	24	0.281605	0.011742	RSQUARE =	0.7213

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.57329051	0.12486540	4.59127	0.0001	
PCTURB	1	0.39843713	0.07056347	5.64491	0.0001	
POPSUR	1	0.15215605	0.06820603	2.23083	0.0367	
DISPRA16	1	-0.15540566	0.04083817	-3.80540	0.0011	

REGRESSIONS FOR CARRIERS WITH TYPE ¬= 0 [d/]

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=GP771PR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	5	0.580516	0.116103	42.017	0.0001
ERROR	22	0.060791	0.002763		
CORRECTED TOT	27	0.641307	0.023752	RSQUARE =	0.9052

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	-0.07322439	0.22909552	-0.31962	0.7523	
MORTAGED	1	0.48970120	0.19844317	2.46772	0.0218	
PCTURB	1	0.34102502	0.05390773	6.32609	0.0001	
PCTMOGN	1	0.09421759	0.01484984	6.34469	0.0001	
DISPRA18	1	0.21238657	0.04025302	5.27629	0.0001	
DISPRA20	1	-0.09244235	0.03411215	-2.70995	0.0128	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_j / \bar{X}$ [a/]

DEP VARIABLE=GP77WPR [b/]

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	3	0.686779	0.228926	32.315	0.0001
ERROR	49	0.347122	0.007084		
CORRECTED TOT	52	1.033901	0.019883		RSQUARE = 0.6643

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.53695184	0.05812319	9.23817	0.0001	
PCTURB	1	0.26433811	0.04920052	5.37267	0.0001	
PCTMDGN	1	0.09743098	0.01614017	6.03655	0.0001	
DISPRA18	1	0.09595495	0.03118059	3.07739	0.0034	

REGRESSIONS FOR TYPE=0 CARRIERS ONLY [c/]

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=GP77WPR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	3	0.222656	0.074219	18.382	0.0001
ERROR	21	0.084789	0.004038		
CORRECTED TOT	24	0.307445	0.012810		RSQUARE = 0.7242

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.69009082	0.09553946	7.22310	0.0001	
PCTURB	1	0.32478714	0.05430375	5.98093	0.0001	
DISPRA16	1	-0.12509822	0.03966163	-3.15414	0.0048	
DISPRA19	1	0.10458081	0.04557425	2.29473	0.0321	

REGRESSIONS FOR CARRIERS WITH TYPE ~= 0 [d/]

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=GP77WPR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	5	0.655502	0.131100	41.066	0.0001
ERROR	22	0.070233	0.003192		
CORRECTED TOT	27	0.725735	0.026879		RSQUARE = 0.9032

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	-0.13227614	0.24624488	-0.53718	0.5965	
MORTAGED	1	0.52766374	0.21329799	2.47383	0.0216	
PCTURB	1	0.37104008	0.05794309	6.40353	0.0001	
PCTMDGN	1	0.09681019	0.01596145	6.06525	0.0001	
DISPRA18	1	0.23192398	0.04326623	5.36039	0.0001	
DISPRA20	1	-0.09221622	0.03666568	-2.51506	0.0197	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_i / \bar{X}$ [a/] DEP VARIABLE=SP77150 [b/]

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	3	0.718307	0.239436	31.595	0.0001
ERROR	56	0.424386	0.007578		
CORRECTED TOT	59	1.142693	0.019368	RSQUARE =	0.6286

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.68938955	0.06599789	10.44563	0.0001	
PCTURB	1	0.31547575	0.04714783	6.69120	0.0001	
PCTPDGN	1	0.08313760	0.01646037	5.05077	0.0001	
DISPRA20	1	-0.11297072	0.04100192	-2.75525	0.0079	

REGRESSIONS FOR TYPE=0 CARRIERS ONLY [c/]
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=SP77150

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	2	0.267195	0.133598	21.620	0.0001
ERROR	28	0.173020	0.006179		
CORRECTED TOT	30	0.440215	0.014674	RSQUARE =	0.6070

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.76565570	0.08870763	8.63123	0.0001	
PCTURB	1	0.33676509	0.05950450	5.65949	0.0001	
DISPRA20	1	-0.15116575	0.05740923	-2.63313	0.0136	

REGRESSIONS FOR CARRIERS WITH TYPE ~= 0 [d/]
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=SP77150

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	1	0.323901	0.323901	25.548	0.0001
ERROR	27	0.342316	0.012678		
CORRECTED TOT	28	0.666217	0.023793	RSQUARE =	0.4862

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.50056802	0.10108137	4.95233	0.0001	
EXPBED	1	0.49986112	0.09889519	5.05445	0.0001	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_i / \bar{X}$ [a/]

DEP VARIABLE=SP77W50 [b/]

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	3	0.755280	0.251760	33.135	0.0001
ERROR	56	0.425484	0.007598		
CORRECTED TOT	59	1.180764	0.020013		RSQUARE = 0.6397

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.69665284	0.06608314	10.54207	0.0001	
PCTURB	1	0.32226742	0.04720874	6.82644	0.0001	
PCTPDGN	1	0.06781815	0.01648163	5.32824	0.0001	
DISPRA20	1	-0.10672535	0.04105489	-2.59958	0.0119	

[c/]

REGRESSIONS FOR TYPE=0 CARRIERS ONLY
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=SP77W50

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	2	0.280388	0.140194	19.756	0.0001
ERROR	28	0.198697	0.007096		
CORRECTED TOT	30	0.479084	0.015969		RSQUARE = 0.5853

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.71443475	0.07747059	9.22201	0.0001	
PCTURB	1	0.36796114	0.06329756	5.81320	0.0001	
DISPRA16	1	-0.10618077	0.04293074	-2.47330	0.0197	

[d/]

REGRESSIONS FOR CARRIERS WITH TYPE ~= 0
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=SP77W50

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	1	0.319776	0.319776	24.984	0.0001
ERROR	27	0.345579	0.012799		
CORRECTED TOT	28	0.665355	0.023763		RSQUARE = 0.4806

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.52678383	0.10156196	5.20651	0.0001	
EXPBLD	1	0.49666840	0.09936538	4.99840	0.0001	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_j / \bar{X}$ [a] DEP VARIABLE=SP771PR [b]

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	5	0.861929	0.176386	31.017	0.0001
ERROR	54	0.307681	0.005687		
CORRECTED TOT	59	1.189010	0.020153	RSQUARE =	0.7417

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.48563950	0.04930653	9.84939	0.0001	
PCTURB	1	0.30590433	0.04252266	7.19391	0.0001	
PCTMDGN	1	0.09309509	0.01424670	6.53450	0.0001	
AMPTA	1	0.22165681	0.06648715	3.33374	0.0016	
AMPTD	1	-0.17125353	0.06860826	-2.49611	0.0156	
DISPRA17	1	0.04902282	0.02218705	2.20952	0.0314	

[c]

REGRESSIONS FOR TYPE=0 CARRIERS ONLY
NOTE: VARIABLE X REPLACED BY X/MEAN (FREE INDEXES EXCEPTED

DEP VARIABLE=SP771PR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	4	0.339602	0.084901	21.616	0.0001
ERROR	26	0.102117	0.003928		
CORRECTED TOT	30	0.441720	0.014724	RSQUARE =	0.7688

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.99551654	0.09189684	10.83298	0.0001	
PCTURB	1	0.30786177	0.04795048	6.42041	0.0001	
DELL	1	0.01459177	0.00538633	2.71034	0.0117	
DISPRA1B	1	-0.08559906	0.03345858	-2.55836	0.0167	
DISPRA20	1	-0.25631314	0.05189948	-4.93865	0.0001	

[d]

REGRESSIONS FOR CARRIERS WITH TYPE ~= 0
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=SP771PR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	3	0.614634	0.204878	39.842	0.0001
ERROR	25	0.128557	0.005142		
CORRECTED TOT	28	0.743191	0.026543	RSQUARE =	0.8270

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.60652014	0.10135033	5.98439	0.0001	
PCTURB	1	0.40686680	0.06105821	6.66359	0.0001	
PCTMDGN	1	0.11347393	0.01702579	6.66483	0.0001	
PCINV	1	-0.13425639	0.05210038	-2.57688	0.0163	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_j / \bar{X}$ [a/]

[b/] DEP VARIABLE=SP77WPR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	5	0.894561	0.178900	31.430	0.0001
ERROR	54	0.307367	0.005692		
CORRECTED TOT	59	1.201868	0.020371	RSQUARE =	0.7443

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.82367365	0.11537952	7.13882	0.0001	
PCTURB	1	0.31866172	0.04230509	7.53247	0.0001	
PCTMCON	1	0.06569545	0.01456800	5.71787	0.0001	
REDEILO	1	-0.22428314	0.09629156	-2.53691	0.0141	
APPIA	1	0.07402486	0.02449966	3.02147	0.0036	
DISPRA16	1	-0.05650575	0.02753430	-2.05219	0.0450	

[c/]

REGRESSIONS FOR TYPE=0 CARRIERS ONLY
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=SP77WPR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	4	0.346743	0.086686	19.638	0.0001
ERROR	26	0.114770	0.004414		
CORRECTED TOT	30	0.461513	0.015384	RSQUARE =	0.7513

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	1.02349852	0.09742371	10.50564	0.0001	
PCTURB	1	0.30576915	0.05083432	6.09370	0.0001	
BLACK	1	0.01423706	0.00571027	2.49324	0.0193	
DISPRA18	1	-0.09371588	0.03547085	-2.64205	0.0138	
DISPRA20	1	-0.26096606	0.05502082	-4.74304	0.0001	

[d/]

REGRESSIONS FOR CARRIERS WITH TYPE ~= 0
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=SP77WPR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	3	0.614977	0.204992	42.424	0.0001
ERROR	25	0.120800	0.004832		
CORRECTED TOT	28	0.735777	0.026278	RSQUARE =	0.8358

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.61733908	0.09824493	6.28367	0.0001	
PCTURB	1	0.41204327	0.05918737	6.96168	0.0001	
PCTMCON	1	0.11263353	0.01650412	6.82457	0.0001	
PCINV	1	-0.13171447	0.05050401	-2.60800	0.0151	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_i / \bar{X}$ [a/]

[b/] DEP VARIABLE=C77150

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	5	0.768299	0.153660	23.461	0.0001
ERROR	54	0.353681	0.006550		
CORRECTED TOT	59	1.121980	0.019017		RSQUARE = 0.6848

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.46574271	0.09191594	5.06705	0.0001	
PCTURB	1	0.36387042	0.04975666	7.31300	0.0001	
PCTMDGN	1	0.09085254	0.01534215	5.92176	0.0001	
HOSPPRD	1	0.02642106	0.00932121	2.33451	0.0064	
DISPRA19	1	0.11465930	0.04855582	2.36139	0.0218	
DISPRA20	1	-0.09100190	0.03833080	-2.37412	0.0212	

[c/] REGRESSIONS FOR TYPE=0 CARRIERS ONLY

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=C77150

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	2	0.246762	0.124381	24.987	0.0001
ERROR	28	0.139379	0.004978		
CORRECTED TOT	30	0.386142	0.012938		RSQUARE = 0.6409

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.72076086	0.06488445	11.10838	0.0001	
PCTURB	1	0.33936125	0.05301403	6.40135	0.0001	
DISPRA16	1	-0.11109292	0.03595607	-3.08968	0.0045	

[d/] REGRESSIONS FOR CARRIERS WITH TYPE ¬= 0

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=C77150

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	2	0.489326	0.244663	29.611	0.0001
ERROR	26	0.214824	0.008262		
CORRECTED TOT	28	0.704149	0.025148		RSQUARE = 0.6949

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.47507951	0.07787389	6.10063	0.0001	
PCTURB	1	0.39363786	0.07064222	5.57228	0.0001	
PCTMDGN	1	0.12482545	0.02110399	5.91478	0.0001	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_i / \bar{X}$ [a]

DEP VARIABLE=C77W50 [b]

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	5	0.834977	0.166995	24.463	0.0001
ERROR	54	0.368627	0.006826		
CORRECTED TOT	59	1.203604	0.020400		RSQUARE = 0.6937

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.46008754	0.09383805	4.90300	0.0001	
PCTURB	1	0.37748815	0.05079715	7.43129	0.0001	
PCTMDGN	1	0.09660715	0.01566298	6.16787	0.0001	
HOSPPRO	1	0.02735346	0.00951613	2.87443	0.0058	
DISPRA19	1	0.12462114	0.04957120	2.51398	0.0150	
DISPRA20	1	-0.08646434	0.03913236	-2.20954	0.0314	

REGRESSIONS FOR TYPE=0 CARRIERS ONLY [c]

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=C77W50

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	2	0.263764	0.131882	23.339	0.0001
ERROR	28	0.158220	0.005651		
CORRECTED TOT	30	0.421983	0.014066		RSQUARE = 0.6251

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.73610752	0.06913089	10.64803	0.0001	
PCTURB	1	0.35176518	0.05648359	6.22774	0.0001	
DISPRA16	1	-0.11099194	0.03830926	-2.89726	0.0072	

REGRESSIONS FOR CARRIERS WITH TYPE ~= 0 [d]

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=C77W50

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	2	0.528403	0.264201	31.246	0.0001
ERROR	26	0.219841	0.008455		
CORRECTED TOT	28	0.748243	0.026723		RSQUARE = 0.7062

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.48415249	0.07877800	6.14578	0.0001	
PCTURB	1	0.41065920	0.07146237	5.74651	0.0001	
PCTMDGN	1	0.12926699	0.02134901	6.05494	0.0001	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_i / \bar{X}$ [a/]

DEP VARIABLE=C771PR [b/]

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	3	0.732872	0.244291	37.653	0.0001
ERROR	56	0.363323	0.006488		
CORRECTED TOT	59	1.096195	0.018580		RSQUARE = 0.6686

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.63777969	0.05515524	11.56336	0.0001	
PCTURB	1	0.31896586	0.04362725	7.31116	0.0001	
PCTMDGN	1	0.09047729	0.01514043	5.97587	0.0001	
DISPRA16	1	-0.06619399	0.02855263	-2.31832	0.0241	

REGRESSIONS FOR TYPE=0 CARRIERS ONLY [c/]

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=C771PR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	4	0.262471	0.070618	20.746	0.0001
ERROR	26	0.088502	0.003404		
CORRECTED TOT	30	0.370973	0.012366		RSQUARE = 0.7614

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.72648438	0.05638724	12.91931	0.0001	
PCTURB	1	0.31597505	0.04416111	7.15505	0.0001	
BEDLC	1	0.01172648	0.00490696	2.39017	0.0244	
DISPRA16	1	-0.13424689	0.03089523	-4.34523	0.0002	
DISPRA17	1	0.05207724	0.02048619	2.54207	0.0173	

REGRESSIONS FOR CARRIERS WITH TYPE ~= 0 [d/]

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=C771PR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	6	0.635083	0.105847	26.770	0.0001
ERROR	22	0.086986	0.003954		
CORRECTED TOT	28	0.722069	0.025788		RSQUARE = 0.8795

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.57862653	0.13500537	4.28595	0.0003	
PCTMDGN	1	0.05285232	0.01688223	3.13065	0.0049	
EXPEED	1	0.28847361	0.07149086	4.03511	0.0006	
AMPTA	1	-0.21883774	0.07024555	-3.11533	0.0051	
AVSTPDA	1	0.30123170	0.06266992	4.80664	0.0001	
DISPRACS	1	-0.25978624	0.11963204	-2.16792	0.0413	
DISPRA18	1	0.24596275	0.05141350	4.78401	0.0001	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_i / \bar{X}$ [a]

DEP VARIABLE=C77WPR [b]

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	4	0.805348	0.201337	32.662	0.0001
ERROR	55	0.339034	0.006164		
CORRECTED TOT	59	1.144383	0.019396		RSQUARE = 0.7037

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.37698974	0.07671023	4.94054	0.0001	
PCTURB	1	0.37696663	0.04820826	7.86103	0.0001	
PCTMUGN	1	0.10022225	0.01464390	6.84396	0.0001	
HUSPERU	1	0.02044763	0.00899488	2.27325	0.0269	
DISPRA19	1	0.12454675	0.04705273	2.64696	0.0106	

REGRESSIONS FOR TYPE=0 CARRIERS ONLY [c]

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=C77WPR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	4	0.289020	0.072255	18.942	0.0001
ERROR	26	0.099176	0.003814		
CORRECTED TOT	30	0.388196	0.012940		RSQUARE = 0.7445

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.73562973	0.05969109	12.32394	0.0001	
PCTURB	1	0.32617692	0.04674861	6.97725	0.0001	
BEDEC	1	0.01102218	0.00519447	2.12190	0.0435	
DISPRA16	1	-0.13014022	0.03270545	-3.97916	0.0005	
DISPRA17	1	0.05195683	0.02166652	2.39581	0.0241	

REGRESSIONS FOR CARRIERS WITH TYPE ~= 0 [d]

NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=C77WPR

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	5	0.654249	0.130850	30.939	0.0001
ERROR	23	0.097273	0.004229		
CORRECTED TOT	28	0.751522	0.026840		RSQUARE = 0.8706

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.57761659	0.12793203	4.51503	0.0001	
PCTURB	1	0.31512557	0.06710418	4.69606	0.0001	
PCTMUGN	1	0.09974005	0.01715787	5.81308	0.0001	
AVSTMLA	1	0.07159657	0.03152585	2.27104	0.0328	
DISPRACS	1	-0.26512062	0.12060852	-2.19819	0.0383	
DISPRA18	1	0.21333052	0.05594075	3.81351	0.0009	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_i / \bar{X}$ [a/]

[b/] DEP VARIABLE=SM175EN

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	7	4.301506	0.614501	25.338	0.0001
ERROR	52	1.261091	0.024252		
CORRECTED TOT	59	5.562597	0.094281		RSQUARE = 0.7733

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.68929364	0.32565443	2.11664	0.0391	
PCTURB	1	0.93047445	0.14964333	6.21795	0.0001	
PCTPOP	1	0.12597639	0.03003680	4.19414	0.0001	
MOSPEND	1	0.06011619	0.01678804	4.26421	0.0001	
PCPMD	1	-0.27109453	0.13378565	-2.03082	0.0474	
PCDEMPR	1	-0.32126670	0.08091104	-3.97062	0.0002	
DISPRACS	1	-0.47676604	0.17642888	-2.67202	0.0100	
DISPRA19	1	0.24386461	0.09948363	2.45130	0.0176	

[c/] REGRESSIONS FOR TYPE=0 CARRIERS ONLY
NOTE: VARIABLE X REPLACED BY X/MEAN

MODEL: MODEL01 DEP VARIABLE=SM175EN

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	2	1.223873	0.611936	31.649	0.0001
ERROR	28	0.541375	0.019335		
CORRECTED TOT	30	1.765248	0.058842		RSQUARE = 0.6933

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.50534740	0.15691393	3.22054	0.0032	
PCTURB	1	0.75428206	0.10525685	7.16611	0.0001	
DISPRAZO	1	-0.25962946	0.10155054	-2.55665	0.0163	

[d/] REGRESSIONS FOR CARRIERS WITH TYPE ~= 0
NOTE: VARIABLE X REPLACED BY X/MEAN (FEE INDEXES EXCEPTED

DEP VARIABLE=SM175EN

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	4	2.926067	0.731517	21.204	0.0001
ERROR	24	0.827964	0.034498		
CORRECTED TOT	28	3.754031	0.134073		RSQUARE = 0.7794

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	1.46056128	0.42895547	3.40493	0.0023	
PCTURB	1	1.05766802	0.14726522	7.18206	0.0001	
REDBIL	1	-1.20316307	0.35202570	-3.41783	0.0023	
RED	1	0.70200576	0.33200091	2.11447	0.0450	
DISPRACS	1	-1.01707200	0.31058147	-3.27473	0.0032	

TABLE 8-4 (continued)

Regression Equations for $X_j = X_i / \overline{X}$ a/

a/ X_j = ratio of individual carrier value (X_i) to the mean for the variable ($\overline{X}$)

b/ All carriers

c/ Type = 0, BC/BS carriers

d/ Type \= 0; all other carriers

Sources: Printouts PIPGC 341, 348 and 349
12/06/78

Dependent Variables

GP77I50	Index of 50th percentile, General Practitioners, 1977
GP77W50	Weighted* index of 50th percentile, General Practitioners, 1977
GP77IPR	Index of prevailing charges index, General Practitioners, 1977
GP77WPR	Weighted* index of prevailing charges, General Practitioners, 1977
SP77I50	Index of 50th percentile, Specialists, 1977
SP77W50	Weighted* index of 50th percentile, Specialist, 1977
SP77IPR	Index of prevailing charges, Specialist, 1977
SP77WPR	Weighted* index of prevailing charges, Specialist, 1977
C77I50	Combined index of 50th percentile GP and SP, 1977
C77W50	Combined weighted* index of 50th percentile index, GP and SP, 1977
C77IPR	Combined index of prevailing charges GP and SP, 1977
C77WPR	Combined weighted* index of prevailing charges, GP and SP, 1977
SMI75EN	Supplementary medical insurance expenditure per enrollee (1975)

* Frequencies of utilization were used as weight in computation of weighted fee indices.

TABLE 8-5

Adjusted Coefficients of Determination

Dependent Variables	All Carriers n	k	R^2	$\bar{R}^2$	BC/BS Carriers n	k	R^2	k	$\bar{R}^2$	Other Carriers n	k	R^2	$\bar{R}^2$
GP77I50	53	6	0.7412	0.7136	25	2	0.6547		0.6397	28	4	0.7904	0.7642
GP77W50	53	6	0.7464	0.7194	25	2	0.6311		0.6151	28	4	0.7996	0.7745
GP77IPR	53	3	0.6627	0.6489	25	3	0.7213		0.6960	28	5	0.9052	0.8887
GP77WPR	53	3	0.6643	0.6506	25	3	0.7242		0.6991	28	5	0.9032	0.8863
SP77I50	60	3	0.6286	0.6156	31	2	0.6070		0.5934	29	1	0.4862	0.4862
SP77W50	60	3	0.6397	0.6271	31	2	0.5853		0.5710	29	1	0.4806	0.4806
SP77IPR	60	5	0.7417	0.7229	31	4	0.7688		0.7431	29	3	0.8270	0.8136
SP77WPR	60	5	0.7443	0.7257	31	4	0.7513		0.7236	29	3	0.8358	0.8231
C77I50	60	5	0.6848	0.6619	31	2	0.6409		0.6285	29	2	0.6949	0.6836
C77W50	60	5	0.6937	0.6714	31	2	0.6251		0.6121	29	2	0.7062	0.6953
C77IPR	60	3	0.6686	0.6570	31	4	0.7614		0.7348	29	6	0.8795	0.8533
C77WPR	60	4	0.7037	0.6878	31	4	0.7445		0.7161	29	5	0.8706	0.8490
SMI75EN	60	7	0.7733	0.7476	31	2	0.6933		0.6827	29	4	0.7794	0.7518

$\bar{R}^2 = R^2 [(n-1)-k-1]/n-k$ - adjusted coefficient of determination

where:
n= number of observations
k= number of explanatory variables
R^2= coefficient of determination

FIGURE 8-1

ALL CARRIERS

9:31 SUNDAY, DECEMBER 10, 1978

PLOT OF P_C7I50*R_C7I50 LEGEND: A = 1 OBS, B = 2 OBS, ETC.

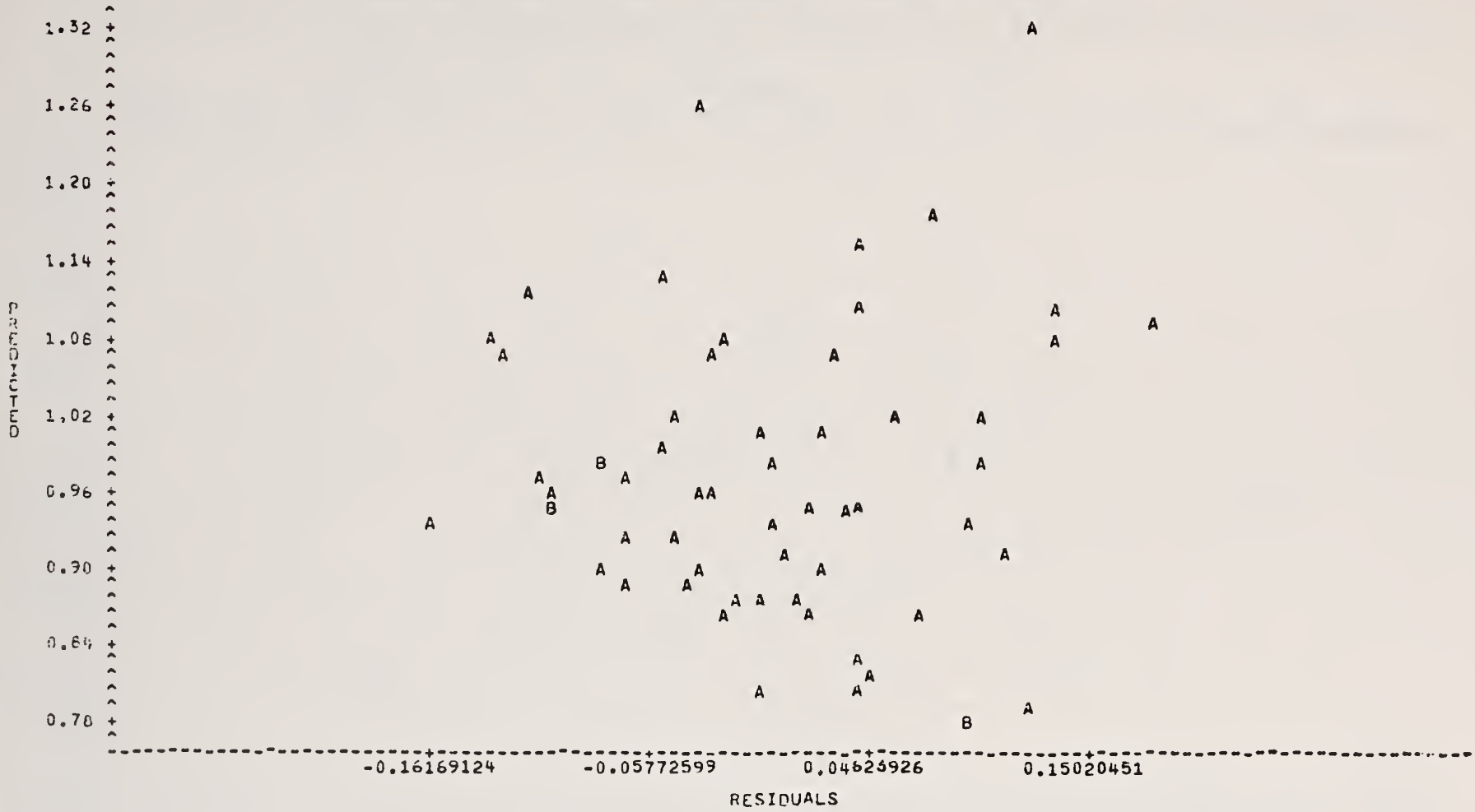


FIGURE 8-1 (CONT'D.)

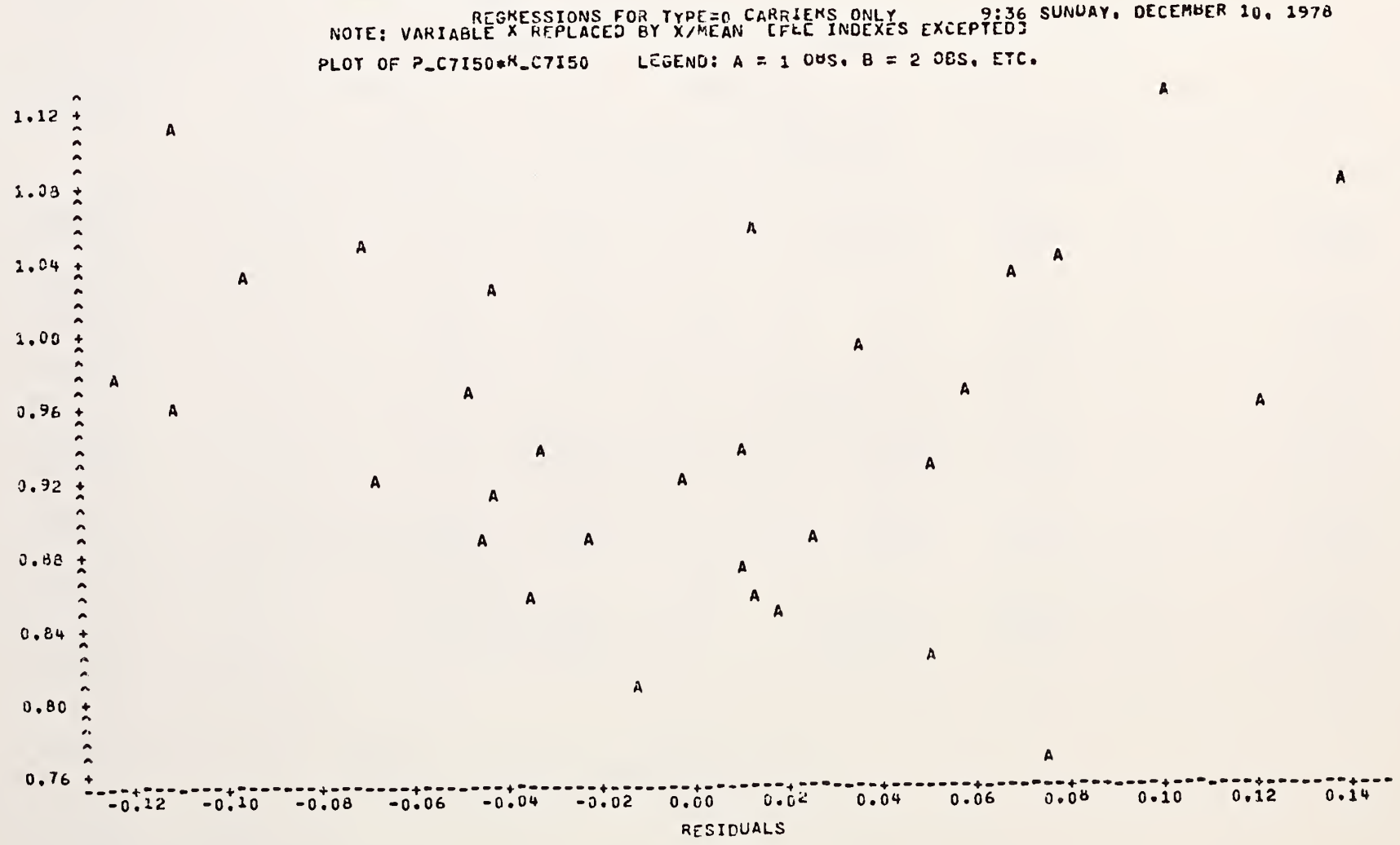


FIGURE 8-1 (CONT'D.)

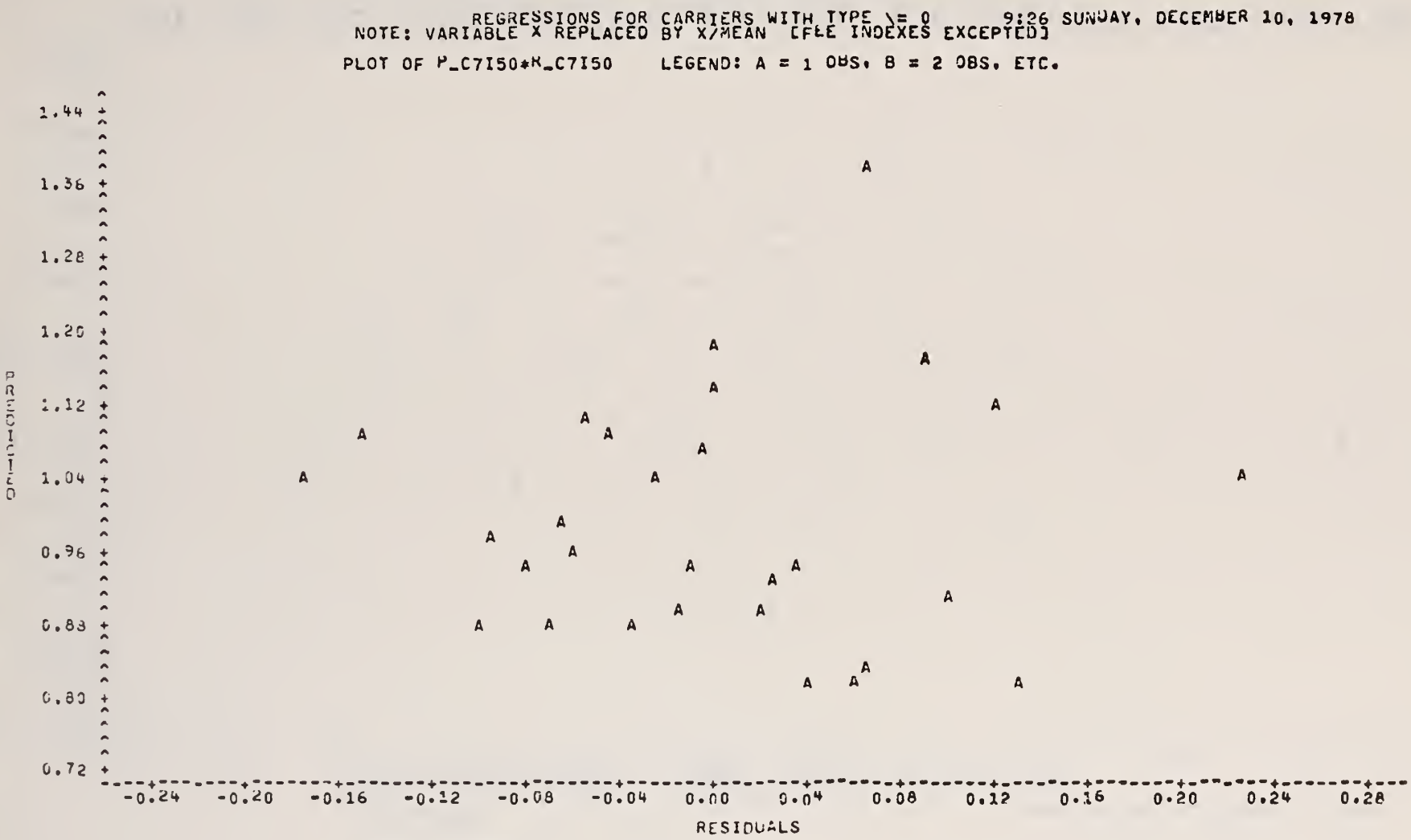


FIGURE 8-1 (CONT'D.)

ALL CARRIERS 9:31 SUNDAY, DECEMBER 10, 1978

PLOT OF P_C7W50*R_C7W50 LEGEND: A = 1 OBS, B = 2 OBS, ETC.

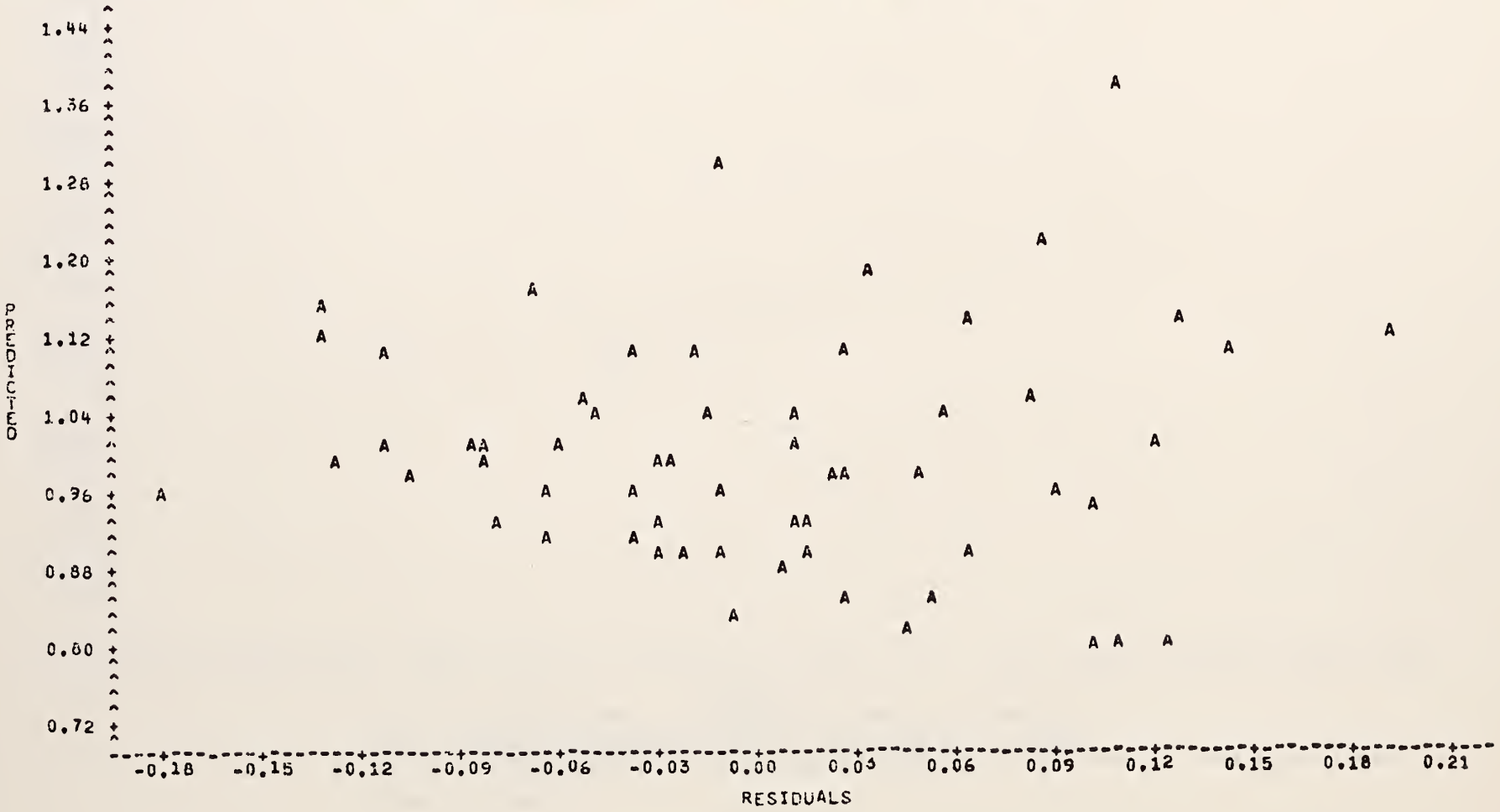


FIGURE 8-1 (CONT'D.)

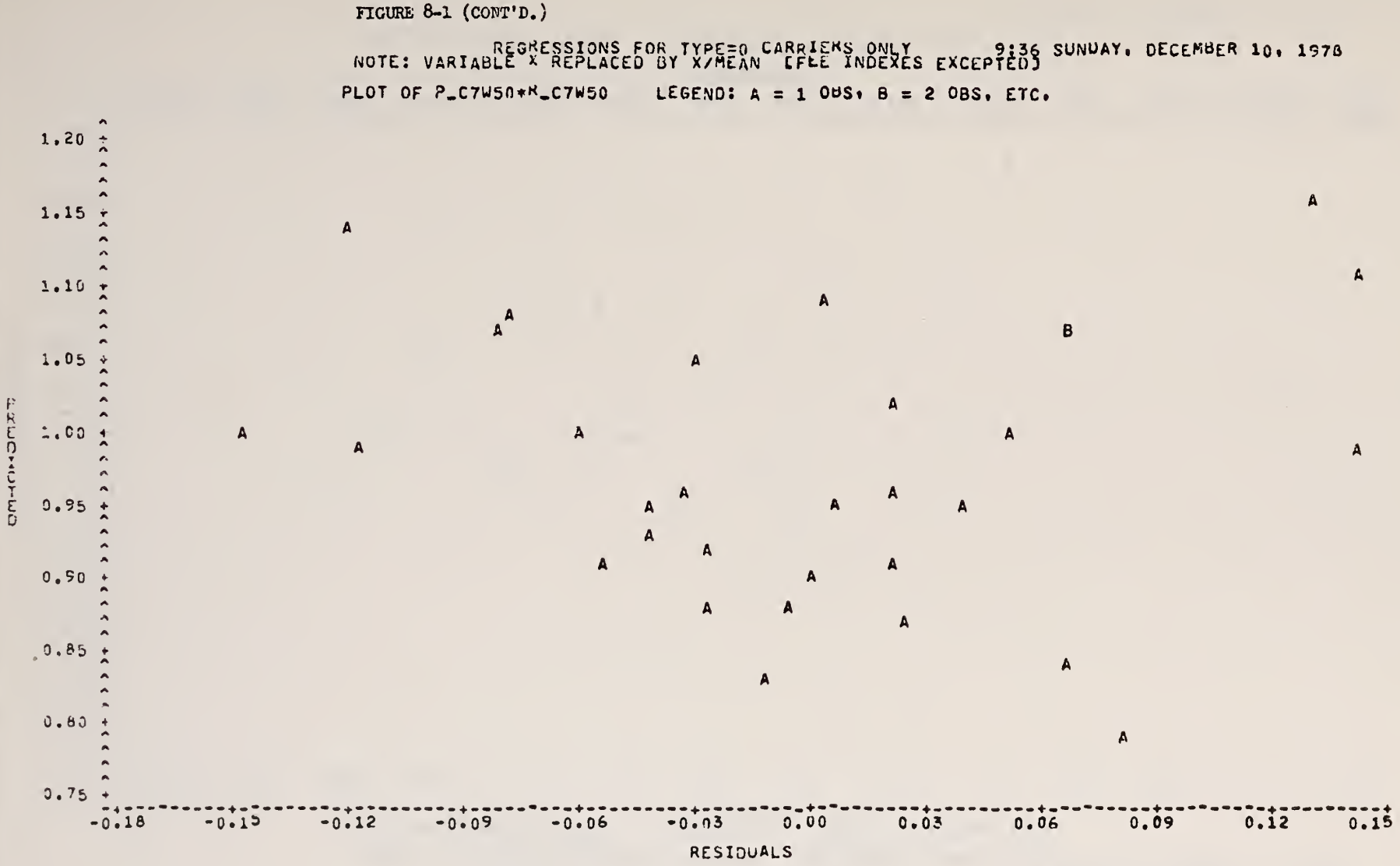


FIGURE 8-1 (CONT'D.)

REGRESSIONS FOR CARRIERS WITH TYPE \= 0 9:26 SUNDAY, DECEMBER 10, 1978
NOTE: VARIABLE X REPLACED BY X/MEAN [FLE INDEXES EXCEPTED]

PLOT OF P_C7W50*R_C7W50 LEGEND: A = 1 OBS, B = 2 OBS, ETC.

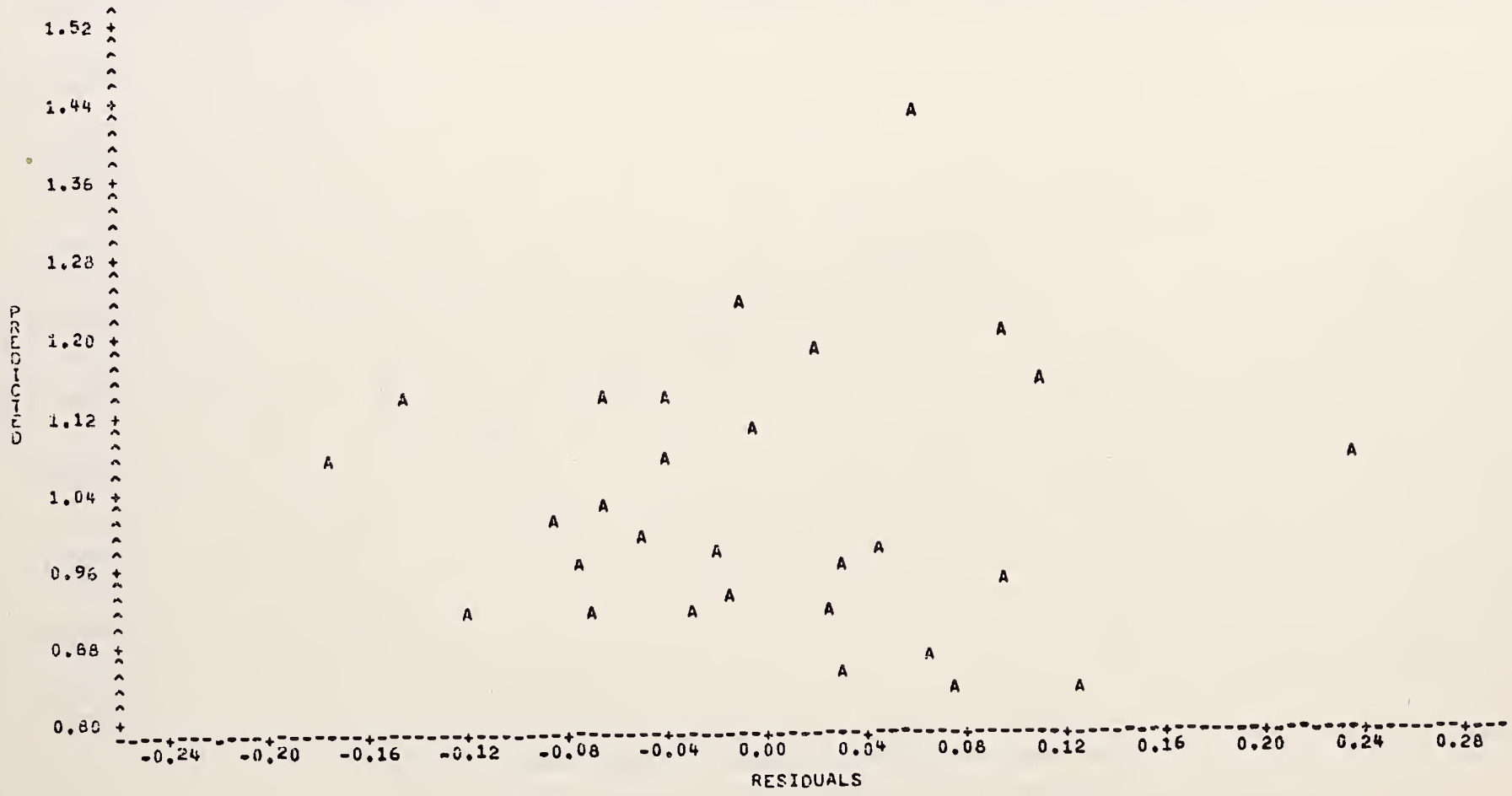


FIGURE 8-1 (CONT'D.)

ALL CARRIERS

9:31 SUNDAY, DECEMBER 10, 1978

PLOT OF P_C7IPR*R_C7IPR LEGEND: A = 1 OBS, B = 2 OBS, ETC.

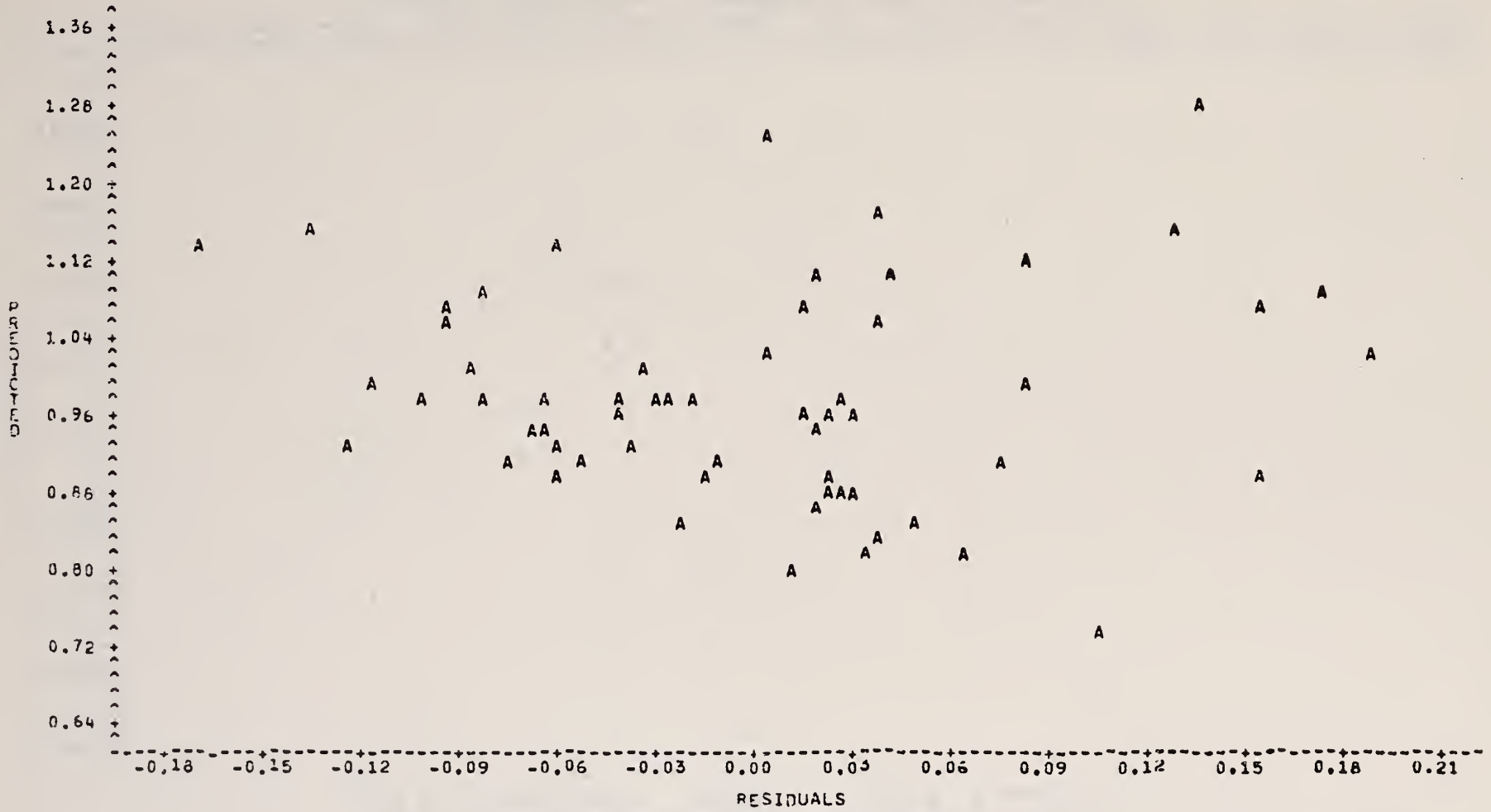


FIGURE 8-1 (CONT'D.)

REGRESSIONS FOR TYPE=0 CARRIERS ONLY 9:36 SUNDAY, DECEMBER 10, 1978
NOTE: VARIABLE X REPLACED BY X/MEAN [FFE INDEXES EXCEPTED]

PLOT OF P_C7IPR*R_C7IPR LEGEND: A = 1 OBS, B = 2 OBS, ETC.

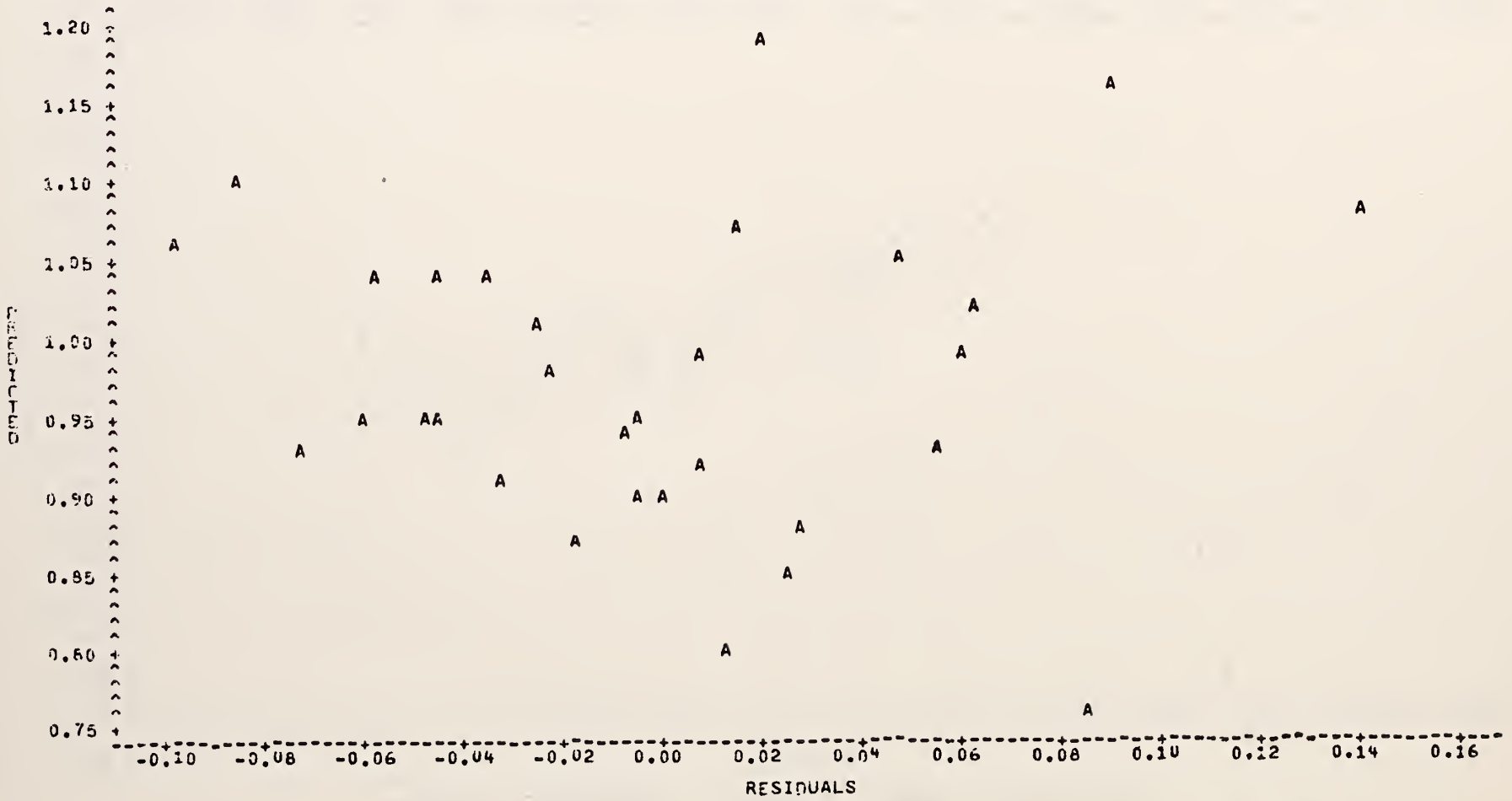


FIGURE 8-1 (CONT'D.)

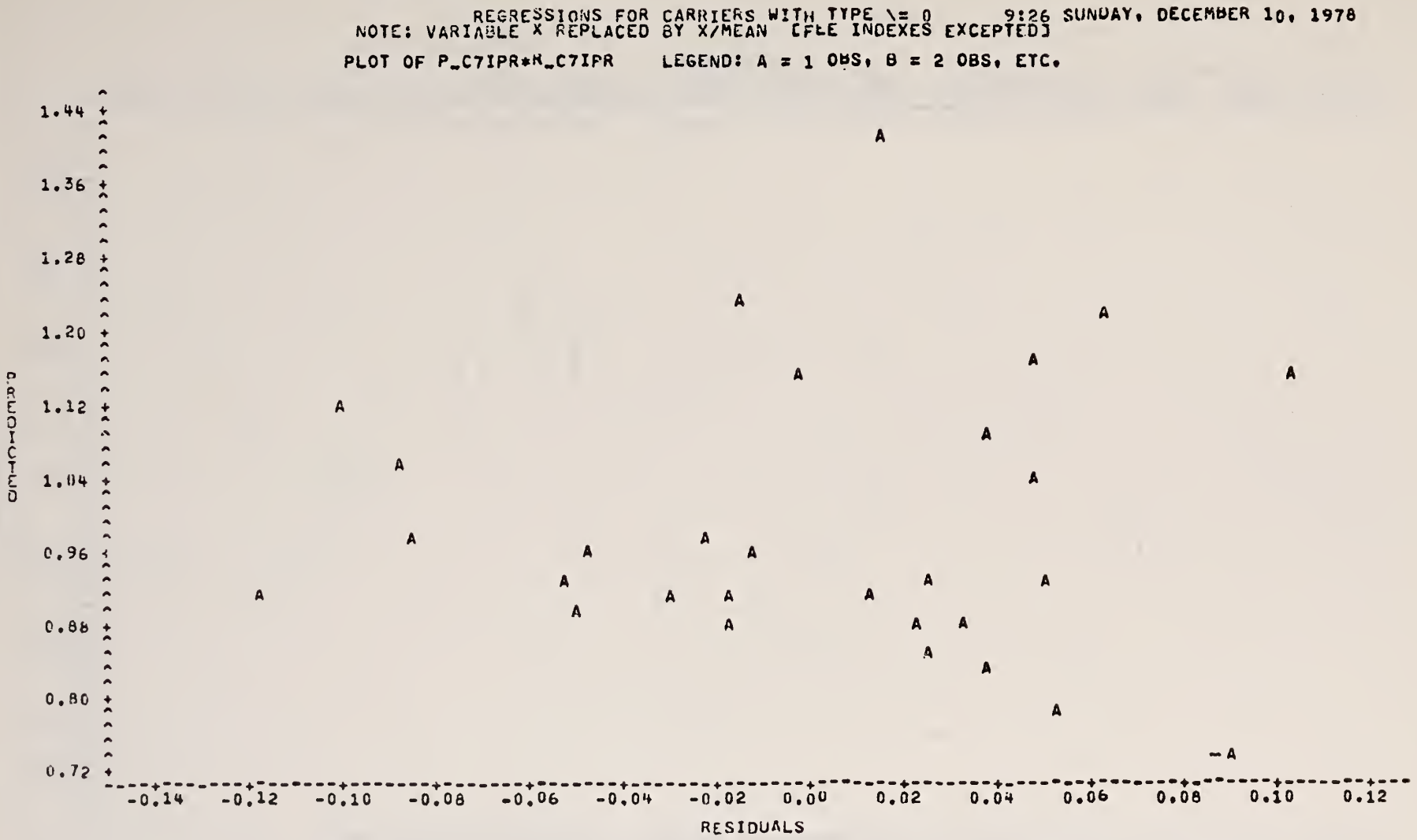


FIGURE 8-1 (CONT'D.)

ALL CARRIERS 9:31 SUNDAY, DECEMBER 10, 1978

PLOT OF P_C7WPR*R_C7WPR LEGEND: A = 1 OBS, B = 2 OBS, ETC.

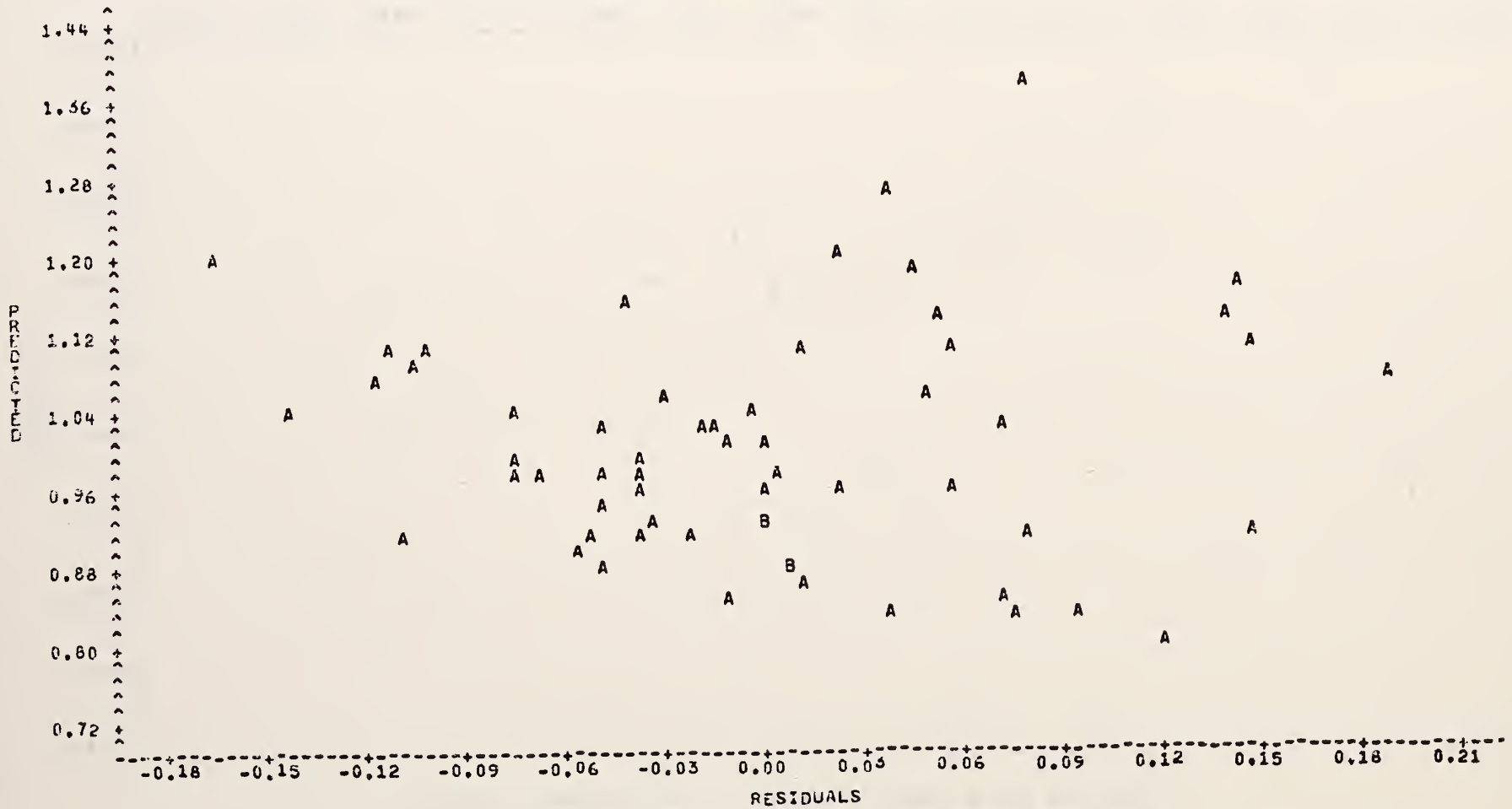


FIGURE 8-1 (CONT'D.)

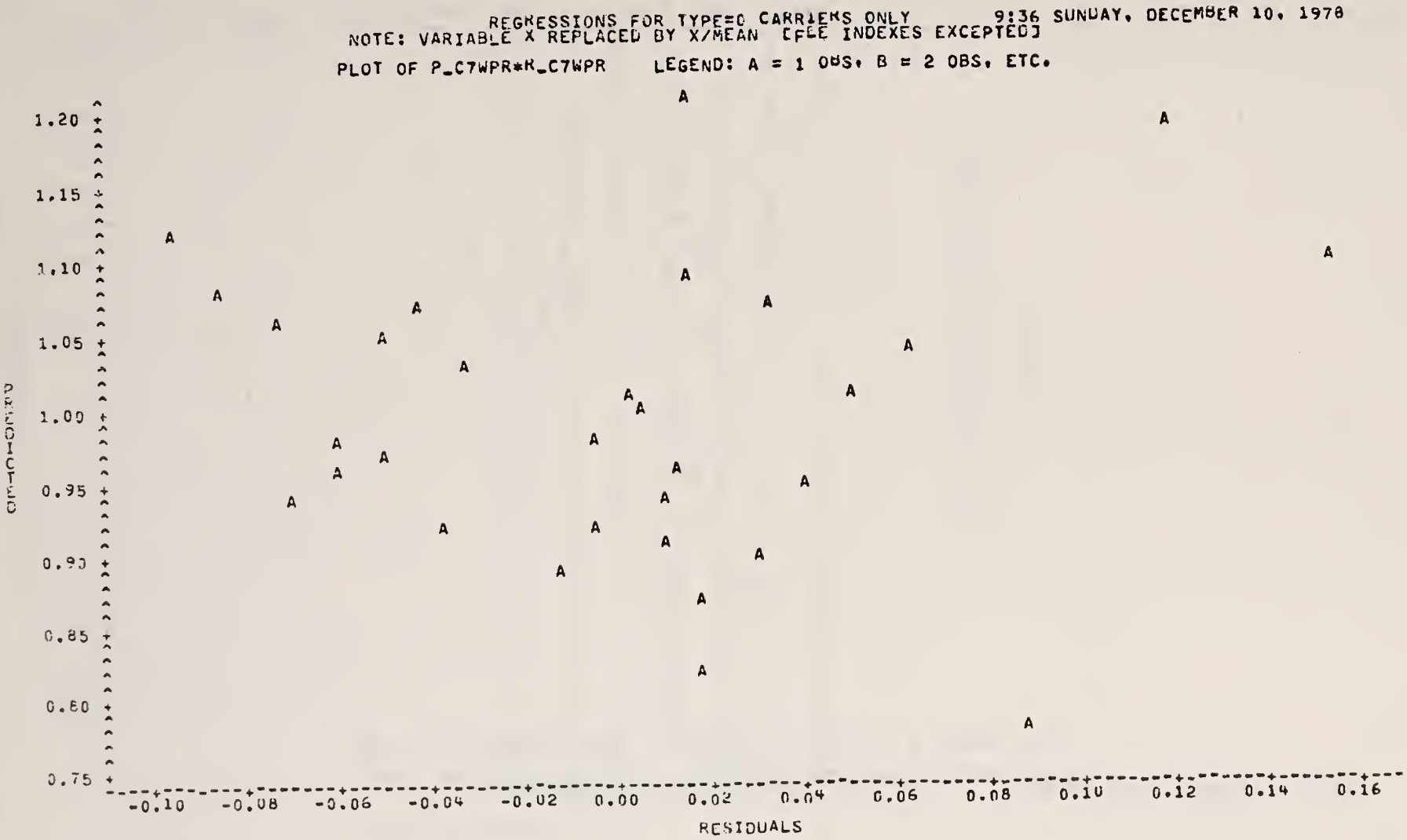
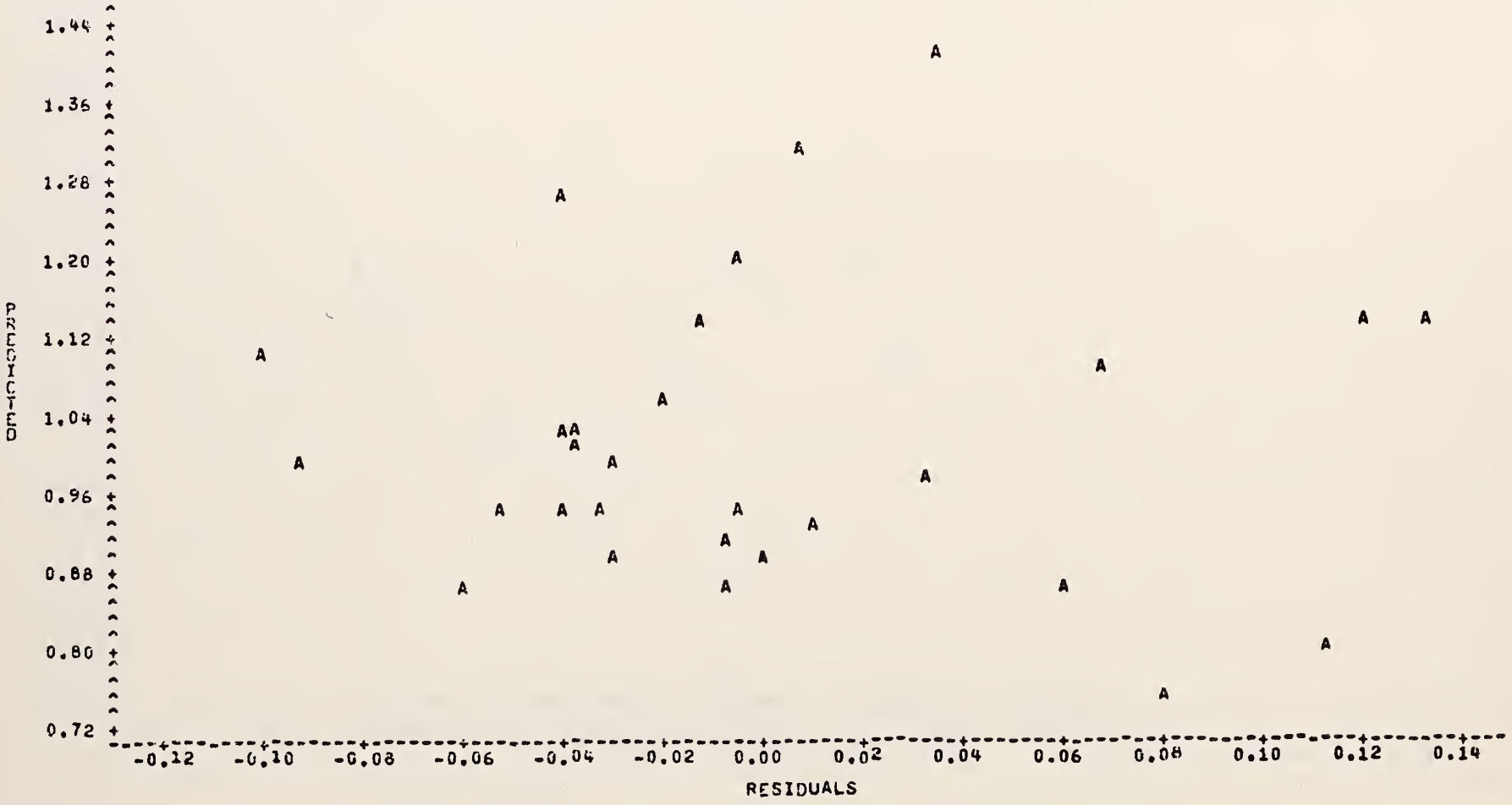


FIGURE 8-1 (CONT'D.)

REGRESSIONS FOR CARRIERS WITH TYPE \= 0 9:26 SUNDAY, DECEMBER 10, 1978
NOTE: VARIABLE X REPLACED BY X/MEAN [FEE INDEXES EXCEPTED]

PLOT OF P_C7WPR*R_C7WPR LEGEND: A = 1 OBS, B = 2 OBS, ETC.



CHAPTER 9

ASSIGNMENT RATE DETERMINATION

Fees and assignment are part of a joint economic decision by physicians under Medicare in response to the total environment for practice and maximization of net revenue. Fees and assignment together influence effectiveness of Medicare in enabling beneficiaries to meet their needs out of limited incomes. The previous chapter has examined the effect of carrier practices on Medicare reasonable charges. The present chapter follows a similar approach in studying the relationship of carrier practices (and market forces) to acceptance of assignment.

Introduction

Under the Medicare reimbursement method an enrollee receives 80% of reasonable charges for covered services, after a deductible - the first $60 in any year has been met. The coinsurance (20% of the reasonable charge), the deductible, and the difference between the physician's charge and the reasonable or allowed charge make up the beneficiary burden. Two types of financial transactions take place between beneficiaries and physicians:

1. Either the patient, with the physician's consent, assigns payment rights to the physician, who accepts the allowed charge as full payment, the carrier reimburses the physician for 80% of the allowed charge after the deductible has been met...

or

2. The physician bills the patient for the service, choosing the charge, in which case the patient is responsible for paying the bill and then claims reimbursement from the carrier for 80% of the allowed charge.

A physician accepting assignment thus agrees to limit his or her fee to the allowed charge.[1/]

The acceptance of assignment influences the amount of health insurance protection that is afforded to the aged by Medicare, and therefore the assignment rate serves as a measure of financial burden of Medicare patients for physician services. Assignment ultimately affects access to care.

It was hypothesized that observed differences in carrier rates of claims investigation, denial and reduction may affect assignment rate. Such differences can reflect not only efficiency in carrying out Medicare purposes, but also conditions in the local health services market in which physicians respond

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1/ Explanation adapted from HIBAC Report: The Effect of the Medicare Method of Reimbursement on Physicians' Fees and on Beneficiaries' Utilization, Robert R. Nathan Associates, April 1973.

to revenue opportunities. For example, if supply of physician services is limited in relation to in-migration of aged persons, improvement of retirement benefits, or general employment - all of which could raise demand levels - physicians might submit claims for nominally unusual services as a way of raising actual fees. A carrier might respond to the behavior by investigating and, having found deviations from its rules or parameters, by reducing claims. Or if, for the same reason, uncovered services were described as covered, claims might be denied.[1/] Two carriers of equal internal efficiency might have different volumes of inflated or unacceptable claims. The difference in assignment rate between two carrier territories cannot be ascribed purely to what carriers do, for physicians might be responding directly to observed demand changes rather than to different claims investigation rates. The method of study had to isolate the effects of the carriers' behavior by taking the economic environment into account. Also, specific carrier discretionary practices related to reasonable charge determination could also affect assignment, if they resulted in lower allowed charges for some or all doctors.

Method of Study

This report is best described as exploratory because aggregative data available on the carrier level do not allow for distinction of physicians by specialty, procedure mix, and other factors that could interact with carrier practices and ultimately influence assignment rate. Furthermore, while the study shows the effect of a number of statistical measurements related to carrier performance,

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1/ According to the Medicare Carriers' Manual, paragraph 2303, not-medically-necessary items and services are considered those which, "are not reasonable and necessary for the diagnosis or treatment of illness or injury, or to improve the functioning of a malformed body member", e.g. personal comfort items, procedures such as colonic irrigation and cellular therapy (section 1862), and services for which frequencies of occurrence deviate from standard practice. There are also cases for which there are no general guidelines and carriers are advised to request their own physician consultant in the BHI to state whether services are covered.

the economic interpretation of these measurements in terms of perceived consequences for physicians is based on assumptions. More studies would be needed to indicate how doctors think their economic position is affected by faster processing of claims, frequent investigation, etc.

The unit of observation for carrier performance is the carrier, but each territory of multistate carriers was considered as a separate carrier. As a result, there are 60 observations.

The general approach used in analyzing assignment rates is similar to the approach used to study the impact of carrier practices on fees as described in Chapter 8. It is hypothesized that physicians seek maximization of net Medicare revenue given the constraints and opportunities of the local market for Part B services and the local administrative framework imposed by Medicare carriers within national regulations. Variables that would represent the local health economy were selected from the DHEW Area Resource File and physician statistics of the American Medical Association, and placed in scale-free form. They were further converted into ratios to national means, thus providing a uniform mode of interpreting results. The socioeconomic variables were used in factor analysis along with measures of carrier performance calculated from the workload report, and discretionary practice items. The factor analysis had the purpose of selecting the most promising explanatory variables for trial in regressions and afforded a way of dealing with the numerous intercorrelations among variables reflecting demand and supply in the health care market. The carrier performance measures included frequency of claims investigation, denial, and reduction in relation to total claims processed over a year, and the relation of average amount of bill reduction to submitted charges. Carrier measures also included mean processing time and stock of pending claims relative to

claims processed (essentially an alternative measure of the same activity). For all of this group, separate rates could be shown for assigned and unassigned claims.

The basic assumption of the analysis was that the acceptance of assignment is an economic decision by physicians. Carrier policies in processing and settling claims raise or lower net revenue of physicians, and therefore, such measures of carrier performance as claims denial rate, delays in payment, and reasonable charge levels would influence assignment decisions.

Carrier policy and performance variables are interpreted as determining what doctors perceive as opportunities, costs, and risks in relation to maximizing their revenue from Medicare practice. Health care market conditions within an area, affecting the sacrifice of potential revenue from accepting assignment, would also influence providers.

The Data Base

The following sources of data were used in the analysis:

Socioeconomic factors

- Area Resource File - ARF May 1977. This source includes demographic and socioeconomic variables, as well as information about health manpower and facilities.

- The AMA's Physician Distribution and Medical Licensure in the U.S., 1975. This contains figures on the number of non-federal physicians in patient care by county, by specialty group.

Program-related factors

- Part B Workload file 1 and Processing Time file 2. The data base is the carrier performance report SSA-1565, which summarizes carrier performance in processing claims under the Supplementary Medical Insurance program for Fee Year 1976.

- SSA-DHEW Publication Medicare: Health Insurance For The Aged, 1975.

This provides information on the number of SMI enrollees and SMI amount reimbursed by county.

Discretionary practices

- CUNY file based on responses to IM 75-53 as described in Chapter 6.

The base for measuring the assignment rate was claims on 1490-1[1/] forms; form 1554 and 1556 claims[2/] were excluded. (However, for denials as "not medically necessary", it was not possible to separate claims by type of form.) While both claims received and claims processed were initially analyzed, all measures were very similar and only the latter base is referred to in the following discussion.

Factors Hypothesized As Influencing the Assignment Rate (ASP)

Socioeconomic variables were expected to affect assignment through effects on demand or supply. Income level, concentration of aged, and their health status would increase demand, and utilization of hospital ambulatory services is interpreted as a sign of heavy demand, but also as a way of meeting it. In addition, population ratios to several supply-related variables introduce a demand/supply interaction.

In this context, relatively high demand compared to other areas means those circumstances that enable doctors to charge more than Medicare allowed charges and to avoid being paid by third party checks - i.e., to refuse assignment. Supply - increasing forces would have an opposite effect.

Complex influences were hypothesized for a number of the health economy variables: in some cases a sign was predicted based on the effect believed to be strongest, and others the direction of the effect was not pre-

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1/ Submitted for physician, supplier, or ambulance service.

2/ Submitted by hospital, skilled nursing facility, or home health agency, or by a group practice prepayment plan.

dicted. Some variables were used as the only available measure - although a poor one - of a possibly influential element in the health economy. (See income and schooling below.) This made prediction guarded at best. However, it was expected that adequate representation of health-economy variables could be achieved to isolate the possible effects of carrier-related actions. Several of the variables identified in preliminary considerations did not satisfy the statistical criteria used to select variables from a factor analysis for the regressions. However, they were typically intercorrelated with variables that did meet the criteria and were tried in the regressions. For example, a measure of urban concentration of population did enter the variable pool for the regression trials but median family income, which is highly correlated with percent urban, did not meet the test. The reasoning involved in considering how the health economy may affect assignment behavior is shown by the following discussion of the initial variables and was influential in choosing variables for factor analysis.

Socioeconomic Variables

Income: It was assumed that the higher the ability to pay of aged beneficiaries, the lower the assignment rate. Physicians would prefer to receive payment directly from the patient for two reasons: first, in order to bill for more than the allowed charge, and second, to avoid delays in payment and risks of claims shrinkage. Although the Medicare program reduced the dependence of demand on income of the aged, it did not eliminate it. As a measure of ability to pay among the aged, since county statistics on the income of SMI enrollees are lacking, median family income is used. While a measure of the income of the aged would have been better, family income also represents general-population demand for care. A negative correlation with assignment rate was expected.

Aged As Percent of Population: More aged would mean a higher demand relative to other carrier territories for two reasons; first, as individuals grow older their

health stock deteriorates and so they will require more medical care. Second, almost all Medicare recipients are insured for physician services and that will enable them to receive some medical services which they could not afford before age 65. Under these circumstances, physicians would be better able to satisfy a preference to receive payment directly from the patient. A negative relation to assignment rate was expected. (This variable did not survive factor analysis directly but is included in mortality rate-age 65 and over, which did.)

Urban Dwellers As Percent of Population: Whether urbanization is favorable to high assignment rates is not obvious. The literature indicates that physicians choose to practice in large metropolitan areas rather than in rural areas. This would be conducive to assignment as an expression of competition. At the same time, in urban areas there may be high concentrations of Medicare recipients, which strengthens demand and is believed to have a negative influence. In addition, specialty mix, available hospital facilities, and other factors may also be affected by urbanization. The direction of the net effect on assignment was not predicted.

Median School Years Completed: Lack of patient understanding of the Medicare program (for example, responsibility for paying the deductible and coinsurance) was considered as an important factor in physicians' willingness to accept assignment in some areas according to previous research.[1/] "Schooling" is used here as a proxy variable. The median for the general population is an available measure of capacity of those surrounding the aged to assist in dealing with Medicare, as well as the skill of the aged themselves; in any case, a statistic for the aged alone was not available. It is recognized as a further limitation that quality of education is not controlled for in the schooling variable. A negative correlation was expected: the fewer the years of schooling, the higher the assignment rate.

1/ Health Insurance Benefits Advisory Council, A Report on the Results of the Study of Methods of Reimbursement for Physicians' Services Under Medicare.

Following this reasoning, physicians take the responsibility of dealing directly with the carrier by accepting assignment, if they believe patients are unable to cope with Medicare forms.

Mortality Rate of Aged: The death rate for ages 65+ was used as a proxy for a bad prognosis of an individual case. Poor prognosis (death) was noted by the RTI [1/] study as one of the factors that determine assignment rate. The higher the mortality rate the less likely the acceptance of assignment. Mortality in earlier years of age after 65 compared with that in later years would have been a more sensitive measure of health status among the aged in an area, but the necessary statistics were not available for this, or for morbidity measures. Health status would be poorer where mortality, is high but economic resources would be lower; hence the net effect on demand and therefore on assignment is unclear.

Ratio of Population to Physicians: Statistics on population relative to physician supply were available for general practice and for medical, surgical, and other specialties (and of course for aggregate supply).

A negative correlation can be expected if decisions of physicians are presumed to be influenced by their financial interest. Variation by specialty was expected based on our previous tabulations and on the RTI, but assignment rate by specialty was not available in the workload report. While this was a limitation, in general it seemed that the more population per MD, the higher the demand for medical services relative to the supply. Physicians would then be less willing to accept the disadvantages of assignment.

Ratio of MDs to DOs: Osteopaths represent an alternative supply source for Part B services and would reduce demand facing each MD, which is favorable to assignment. Since the inverse of this effect is reflected in the form of the variable, [2/] a negative sign was expected.

1/ Research Triangle Institute Report, Factors Physicians Take into Consideration in Accepting Assignment (Appendix C of HIBAC Report), August 1972.

2/ The reason in this and other cases was to avoid zero values for computational reasons.

Ambulatory Visits Per Bed: If this ratio is large, there is an important alternative to physician office care and demand for the individual MD is less, which is conducive to assignment. However, all hospital-related variables have complex theoretical consequences for the physician service market. Hospitals may represent cooperating factors of production available to doctors at little cost, which should encourage assignment. (Since these factors may be indicated by beds, the ambulatory variable with beds in the denominator could embody an element that is unfavorable to assignment.) If competitive with private doctor services, hospital facilities would reduce demand and have a positive effect on assignment. Also, hospital services make more complex procedures possible. This may oblige MDs in narrow specialties to accept assigned claims to fill up their time, in view of the low natural prevalence of the conditions that they treat. Measures of teaching programs and hospital-based MDs reflect supply reduction or direct competition depending on the degree of emphasis on patient care associated with teaching programs and whether this is primary or specialty care.

Workload Variables

Carrier performance measures form the second group of independent variables. Carrier administrative performance was measured by claims control activities - investigation, denial and reduction of claims - and by processing speed or turnover. Physicians' revenue opportunities are affected by these and it was believed that they would respond by modifying the rate of assignment.

Investigation Rate: This is defined by claims investigated in 1976 as a percent of claims processed. It was assumed that a high investigation rate implies both more uncertainty of payment and delays in payment that may discourage the acceptance of assignment. A negative correlation with assignment rate was expected.

Claims Reduction and Denial Rates: Denial of claims exposes doctors to a risk of not being paid for their service which is avoided by not accepting assignment.

Denial rates were expected to be negatively correlated with assignment. The physician's concern is with the rates for assigned claims. As indicated in connection with fees in Chapter 8, intercorrelations among workload variables should be assessed in order to give correct interpretation to any relation found to assignment. Investigation, denial, and reduction are substantially independent. Stock of pending claims, as would be expected, is correlated with mean processing time.

The other carrier variables considered in examining determination of assignment were discretionary elements in the reasonable charge process as described in Chapter 6. Selected practices were entered into the assignment regressions after factor analysis. In general, it was expected that a strict practice would discourage assignment.

Claims reduction rate, showing the frequency with which billed charges are reduced as a result of reasonable charge determination, was expected to have a similar negative effect. Physicians would prefer not to depend on Medicare to determine the level of revenue from given sources, and would satisfy this preference by refusing assignment.

Mean Processing Time and Average Stock of Pending Claims: Processing time is a measure of carrier efficiency that is reported for each carrier in the Workload Report. Speed in processing assigned claims is believed to be conducive to assignment, since it frees working capital and shortens the duration of uncertainty about claims denial or reduction, but the doctor would be indifferent to processing speed for unassigned claims.

Another measure of carrier efficiency is average stock of pending claims between July 1975 and June 1976 as a ratio to claims processed. This measure is highly correlated with processing time, but met the statistical criterion used to take variables from factor analysis for trial in regression. The greater the stock of pending claims, the lower the expected assignment rate, since there would be a higher cost or inconvenience to the physician in accepting assignment because of the delay of payment. Again, it is the assigned claims that would

be of interest to the practitioner.

Regression Results

The results of the regression analysis (Table 9-1) indicated that carrier differences in Medicare administration did play a role in the determination of assignment rate. For all carriers, both a high denial rate for assigned claims and a high investigation rate tended to decrease acceptance of assignment. These results conformed to expectation. The carrier variation in interpreting the pricing rule that Medicare fee screens be compared with other screens was the only discretionary practice to have an effect. The sign was negative. A "tough" practice in this area would be equivalent to a price ceiling. Investigation and denial, too, can be interpreted as price-depressing. However, fee levels, which were included as independent variables, did not make any contribution to explained variance in assignment. Two socioeconomic variables entered the assignment rate equation for all carriers. Mortality of the aged had a positive effect. Perhaps the predominant effect of a high aged death rate is that elderly residents are more likely to have exhausted their financial resources, and physicians apply the sliding scale by accepting assignment. The presence of hospital teaching programs increased assignment. This is consistent with interpretation of such programs as supply-augmenting, but as other interpretations were also possible, a sign had not been predicted. The R^2 value of .45 indicates that all causal factors have not been identified. However, separation by carrier type improves the explanation of the variance in assignment. The R^2 value is .57 for Blue carriers and .58 for all others. Variables from the health economy and from carrier practices entered the equations.[1/]

For the Blues, claims investigation and the practice governing the pricing rule when there is no prevailing had significant coefficients. But while a high investigation rate again depressed assignment, the tough pricing rule increased assignment. The reason for this is not clear. When the

1/ The R^2s adjusted for the number of explanatory variables ($\bar{R}^2$) are .41, .53, and .55 respectively. (Table 9-1).

relation of carrier toughness on pricing in absence of a prevailing to toughness on the minimum number of charges to compute a prevailing was analyzed by cross-tabulation, there was not a clear relationship. For instance, eighteen of the carriers that used the strictest pricing method had the least likelihood of resorting to it because they required no more than three charges to develop a prevailing; among these carriers were a number of the Blue Shield plans. Possibly a more complex measure was needed to represent the pricing practice, or possibly these "tough" carriers had something else in common. As in the all-carrier equation, health-economy variables affected assignment but the specific variables involved were not the same. Expenditure of hospitals per bed had a positive effect. This may be indicative of several effects on physician revenue; among them higher inpatient costs, weakening ability to pay for physician services, and competitive supply. A measure of concentration of hospital resources in long-stay beds had a negative effect, which could be related to more intense demand for acute-illness services.

For non-Blue (chiefly commercial) carriers, frequent denial of assigned claims tended to depress assignment rates, as was true for all carriers combined. The health-economy variables of significance were related to the physician supply. A high concentration of interns and residents had a positive effect. A possible explanation is that alternative sources of supply of physicians' services for the poor elderly are implied in graduate teaching programs. The ratio of population to physicians in "other" specialties (not medical, surgical, or GP) also had an unexpected positive effect. The role of the health-economy variables is less satisfactorily explained for assignment than for fees, since urbanization and the portion of physician supply in general hospitals repeatedly showed an influence on fees. One difference between the two analyses is that assignment is not mea-measured by specialty while it is known from the 1971 tabulations that there is variation among the specialties. There may also be important differences based

on size of Medicare workload relative to the total practice of a physician. The regression coefficients in Table 9-1 show the sensitivity of assignment rates to specific predictor variables.

For all carriers, a 1% increase in the investigation rate would lead to a decline of .32% in the assignment rate. For Blue carriers, a similar increase in the investigation rate would lead a decrease of .48% in the assignment rate. (No significant effect is shown for non-Blue carriers.) Denial rate was influential in the all-carrier and non-Blue equations. The former shows that a 1% rise in denial rate would lead to a .27% decrease in assignment. The corresponding decrease in the non-Blue equation is .44%. A plot of residuals, Figure 9-1, shows no discernable pattern.

In summary, there were clearcut findings indicating that carrier investigation and denial of claims submitted by physicians were a deterrent to assignment. There was also evidence of significant responsiveness to factors in the health economy, but the interpretation of how the factors affect the individual physician's decision remains elusive. This may be due to the limitations of the statistical measures available to represent supply- and demand-related forces. Results for two variables were unexpected while in others related to hospital activities the complexity of the causality had been anticipated. The unexpected behavior of two discretionary pricing practices suggests that additional analysis would be necessary to identify the implications of the carrier practices for physician revenue in given submarkets of Medicare classified by frequency of performance of a specific procedure. That MDs are responsive to carrier behavior is already shown by the effect of investigation and denial rate. Why there is a response to specific practices in the RCP could be better elucidated by surveying individual physicians and by taking account of their possibly varying Medicare workload and procedure mix in the questions used. The reader is reminded of the underutilization problem of the physician in a narrow specialty to which assignment offers a solution.

Those results which were unclear may have been due to the fact that available measures of particular causal factors were not able to represent them sensitively, and to unanticipated meanings of the variables that were used in terms of physician reasoning about gains and risks of the assignment decisions. The study of physician behavior in Queens and Nassau reported in Chapter 12 shows that some physicians always accept assignment, others never do, and still others do sometimes. How individuals in these three classes respond to a carrier performance measure would be pertinent to analysis of the overall assignment rate.

The analysis by the Institute of Medicine of determinants of Medicare net assignment rate[1/] for the years 1969-1972 used as independent variables per capita income, physicians per 100,000 population, percent of population over 65, region, carrier rate of reduction, and mean allowed charge.[2/] The regression equations used explained 37 percent of the variation in assignment rate in 1969, 48 percent in 1970, and 46 percent in 1971 and 1972. The present results for 1976 are comparable in terms of variance explained and when carriers are separated by type, the explanation improves. The variables of influence were not the same, but carrier administration and the health economy are shown as influential in both analyses. The work by the Institute of Medicine indicates that experience of physicians with a carrier policy in year t is associated with assignment decisions in year t + 1.[3/] This lag effect could not be studied in the single-year data available in the Workload Report, and would perhaps contribute to an improved explanation of observed variation in assignment rates.

1/ IOM Medicare-Medicaid Reimbursement Policies, July 1976, technical appendix p. 172.

2/ The IOM did not consider the discretionary practices available to and used by CUNY in its analysis.

3/ The IOM study found that the association between the rate of reduction in the previous year (1971) and the current year assignment rate (1972), was stronger than that obtained when 1972 values were used for both variables.

TABLE 9-1

Regression Equations for $X_j = X_i / \bar{X}$ [a/]

DEP VARIABLE=ASP [b/]

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	5	2.756468	0.551294	8.937	0.0001
ERROR	54	3.331183	0.061689		
CORRECTED TOT	59	6.087652	0.103181		RSQUARE = 0.4528

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.03350200	0.56064012	0.05770	0.9542	
MORTAGED	1	1.81487659	0.57745227	3.14290	0.0027	
HOSPEXD	1	-0.08213655	0.02497028	-3.28945	0.0018	
PCOENPRA	1	-0.27206796	0.07332054	-3.71066	0.0005	
PCINV	1	-0.31900360	0.11524768	-2.76798	0.0077	
DISPRA18	1	-0.17516648	0.08638194	-2.02784	0.0475	

[c/]

REGRESSIONS FOR TYPE=0 CARRIERS ONLY
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=ASP

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	4	1.392122	0.348031	8.758	0.0001
ERROR	26	1.033244	0.039740		
CORRECTED TOT	30	2.425366	0.080846		RSQUARE = 0.5740

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.63761666	0.19891789	3.18029	0.0038	
EARLED	1	0.58571450	0.12909477	4.51610	0.0001	
LONG	1	0.09311833	0.04454844	2.09027	0.0465	
PCINV	1	-0.48061035	0.14077835	-3.41395	0.0021	
DISPRA17	1	0.16916086	0.07133546	2.37134	0.0254	

[d/]

REGRESSIONS FOR CARRIERS WITH TYPE ~= 0
NOTE: VARIABLE X REPLACED BY X/MEAN

DEP VARIABLE=ASP

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F RATIO	PROB > F
REGRESSION	3	1.955790	0.651930	11.552	0.0001
ERROR	25	1.410901	0.056436		
CORRECTED TOT	28	3.366691	0.120239		RSQUARE = 0.5809

SOURCE	DF	B VALUE	STD DEVIATION	T FOR HO:B=0	PROB > |T|	LABEL
INTERCEPT	1	0.95827136	0.20237211	4.73519	0.0001	
MOTR	1	-0.04246301	0.01493762	-2.84269	0.0088	
PUPOMD	1	0.52663985	0.15731752	3.34762	0.0026	
PCOENPRA	1	-0.44244820	0.11236260	-3.93768	0.0006	

a/ X_j = ratio of individual carrier value (X_i) to the mean for the variable ($\bar{X}$)
b/ All carriers
c/ Type = 0, BC/BS carriers
d/ Type\ = 0; all other carriers

FIGURE 9-1

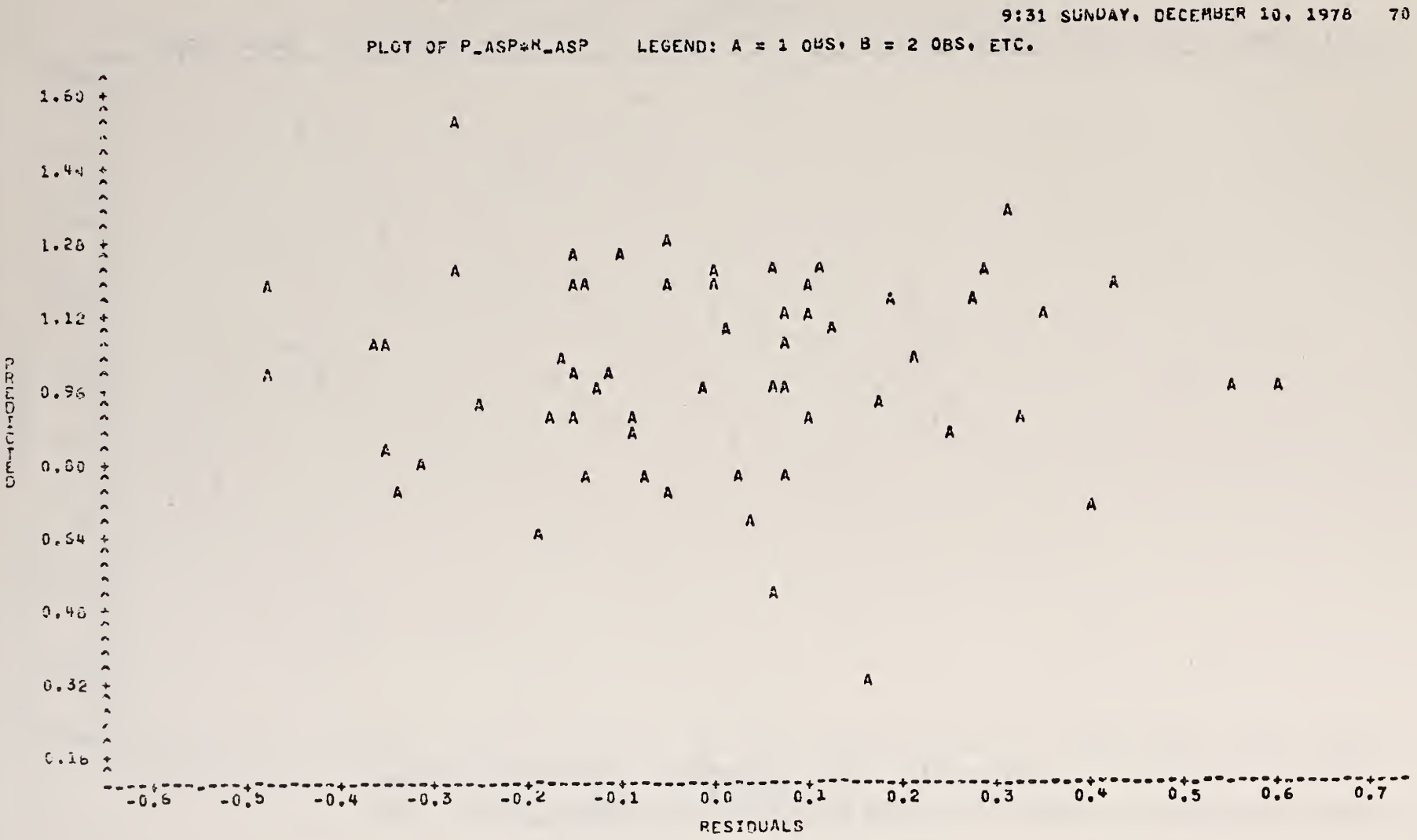

9:31 SUNDAY, DECEMBER 10, 1978 70
PLOT OF P_ASP*R_ASP LEGEND: A = 1 OBS, B = 2 OBS, ETC.
PREDICTED
1.60
1.44
1.28
1.12
0.96
0.80
0.64
0.48
0.32
0.16
-0.6
-0.5
-0.4
-0.3
-0.2
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
RESIDUALS

FIGURE 9-1 (continued)

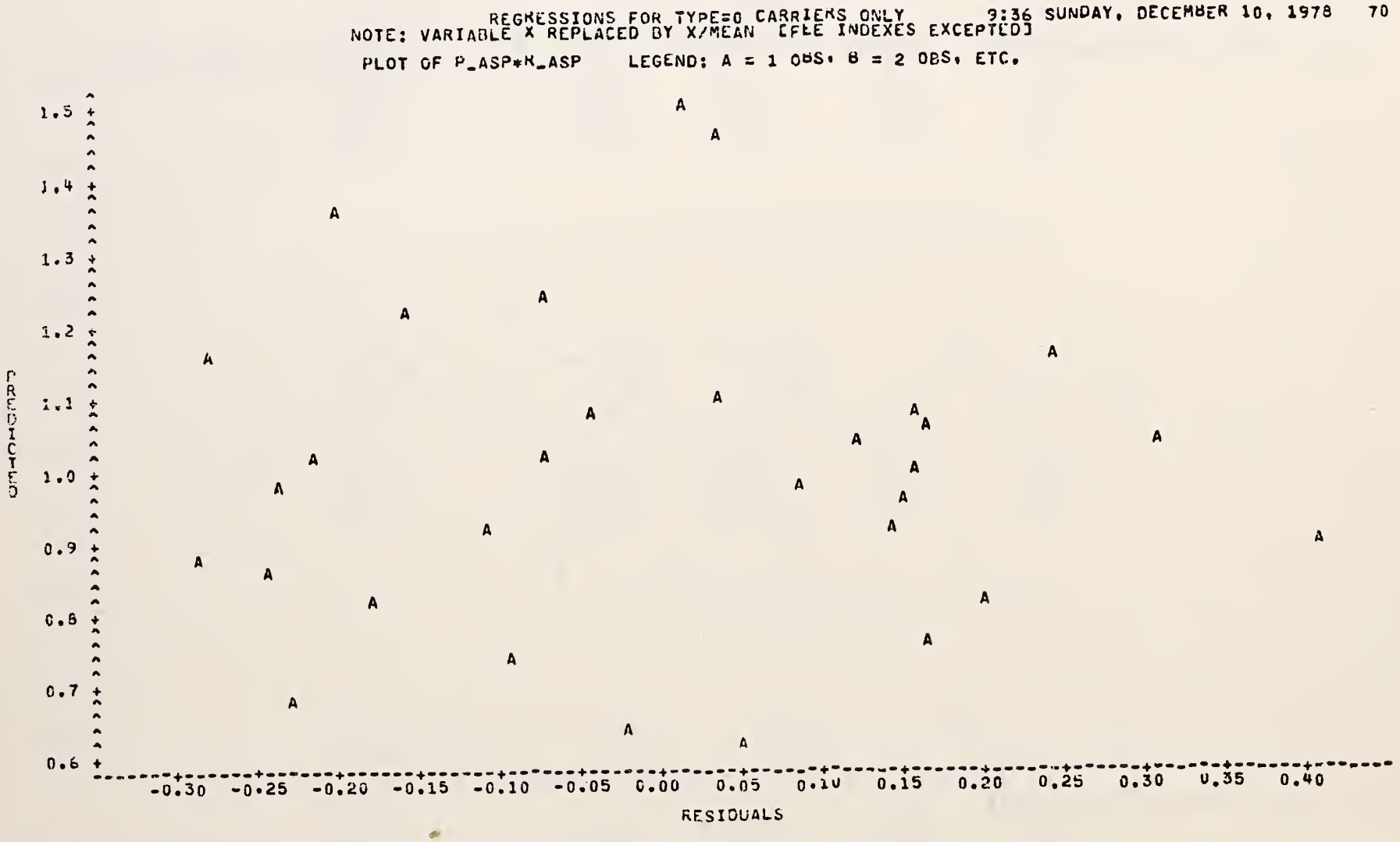
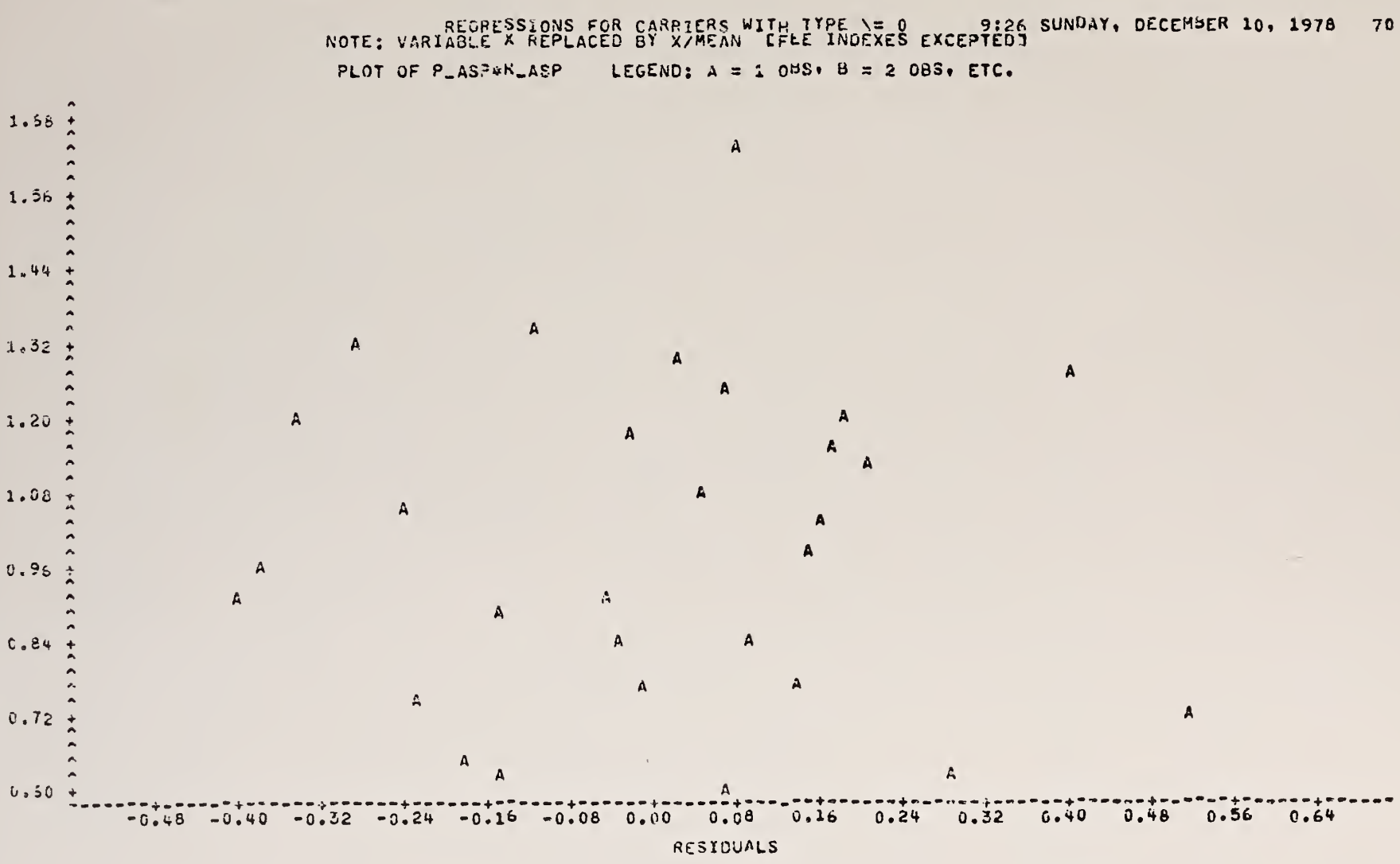


FIGURE 9-1 (continued)


REGRESSIONS FOR CARRIERS WITH TYPE \= 0 9:26 SUNDAY, DECEMBER 10, 1978 70
NOTE: VARIABLE X REPLACED BY X/MEAN (FLE INDEXES EXCEPTED)
PLOT OF P_ASP*R_ASP LEGEND: A = 1 OBS, B = 2 OBS, ETC.
1.68
1.56
1.44
1.32
1.20
1.08
0.96
0.84
0.72
0.60
-0.48 -0.40 -0.32 -0.24 -0.16 -0.08 0.00 0.08 0.16 0.24 0.32 0.40 0.48 0.56 0.64
RESIDUALS

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